Ministry of
Fisheries
Te Tautiaki i nga tini a Tangaroa

Review of Sustainability Measures and Other Management Controls for the 2010/11 Fishing Year

Final Advice Paper

7 September 2010

New Zealand Government

Contents

Introduction

1 This paper provides you with the Ministry of Fisheries (MFish) final advice on those sustainability measures, deemed values and other management controls reviewed for 1 October 2010.

2 **Your decisions are required before 15 September 2010.** This will enable gazette notices to be in place for the start of the next fishing year on 1 October 2010.

Initial Position Papers

3 The initial position papers (IPPs) were developed for consultation as required under the Fisheries Act 1996 (the Act). They contained MFish's initial position on the fishstocks and deemed values identified for review. MFish emphasised that the views and recommendations outlined in the papers were preliminary and were being provided as a basis for consultation with stakeholders.

Consultation

4 MFish provided copies of the IPPs (attached separately) to iwi and stakeholders and asked them to provide submissions on the IPPs by the dates set out in the table below.

5 A summary of the submissions received is outlined in each section of this advice paper. Full submissions are attached separately as Volume Two.

Subject	**Consultation Period**
Inshore Sustainability	21 June – 26 July 2010 (6 weeks)
Inshore and Deepwater Deemed Value	As above
Deepwater Sustainability[1]	6 July – 4 August 2010 (4 weeks)
Bladder Kelp Sustainability Measures and Deemed Value	4 March – 15 April 2010 (6 weeks)
Bladder Kelp Additional Sustainability Measures	11 June – 23 July 2010 (6 weeks)

Final Advice Paper

6 Each section of the Final Advice Paper (FAP) provides MFish discussion (including an analysis of your statutory obligations in relation to each issue) and MFish's preferred options.

7 A summary of recommendations is included at the end of this paper.

[1] Note: MFish met with key stakeholder groups to discuss IPPs prior to releasing them for consultation

8 A copy of this FAP will be made publically available following the announcement of your decisions.

Implementation of Decisions

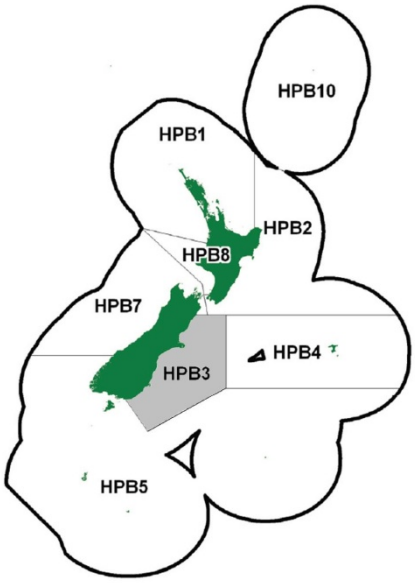
9 Section 12(2) of the Act requires that after setting or varying any sustainability measure, you are required to, as soon as practicable, give to parties consulted, reasons in writing for your decisions.

10 Following your final decision on any changes to sustainability measures for 1 October 2010, officials will provide you with a draft letter for this purpose.

Inshore Sustainability Round

HAPUKA/BASS 3 (HPB 3)

Figure 1: Quota Management Areas (QMA) for HPB



Executive Summary

1 The Ministry of Fisheries (MFish) recommends that you set a Total Allowable Catch (TAC) for HPB 3 of 537.6 tonnes (t) for the start of the 2010/11 fishing year.

2 Landings over the past 10-15 years have been greater than the current TACC (335.1 t), with no apparent adverse changes to the performance of the fishery. The biology and life history of HPB suggests, however, that these species are susceptible to overfishing and will be slow to recover if over-exploited. There is also little fishery data to inform biomass trends.

3 MFish recommends that the TAC be allocated as follows:

- 1 t allowance for customary interests;
- 195 t allowance for recreational interests;
- 6.5 t allowance for other sources of fishing related mortality;
- TACC of 335.1 t.

4 MFish recommends that the interim and annual deemed value rates be increased to $2.30 per kg and $2.80 per kg, respectively. Increasing the deemed value rates would reduce profit margins on deemed fish and provide greater incentives to manage harvest to within Annual Catch Entitlements (ACE) holdings and consequently the TACC.

Background

5 HPB 3 entered the QMS in 1986 and, apart from Quota Appeal Authority decisions, the TACC has remained unchanged at 335.1 t. No TAC, allowances for non-commercial interests, or for other sources of fishing-related mortality have previously been set.

6 HPB 3 consists of two species, hapuku (*Polyprion oxegeneios*) and bass (*P. americanus*) along the east coast of the South Island. Reported catches do not

distinguish between species. The common term for both these species is groper which will be used as the collective term for these species in this paper.

7 HPB3 is being reviewed for the 2010/11 fishing year at the request of the fishing industry, and due to the potential for improved utilisation of this stock. MFish notes that deemed value charges for HPB 3 have exceeded $100,000 for three of the last five years and that this represents a significant cost on the fishery.

8 You are being asked to set a TAC for this stock under section 13 of the Act and to vary the TACC under section 21 of the Act. To assist you to make decisions this paper sets out:

- Background on biological characteristics of the stock, a description of the fishery and best available information on stock status;
- Analysis to inform your decision on varying the TAC, including points raised in submissions; and
- Analysis of matters to inform your decision on allocating the TAC, including points raised in submissions.

9 This paper also contains proposals to amend the deemed value regime for this stock.

Consultation

10 MFish released an IPP for public consultation on 21 June 2010, with submissions closing on 26 July 2010. The IPP was published on the consultation section of the MFish website and posted and emailed to persons and organisations with an interest in HPB 3.

Submissions received

11 MFish received 11 submissions on the IPP from:

- Ocean Fisheries Limited and Ocean Fisheries Quota Holding Company Ltd (Ocean Fisheries)
- Kaikoura Boating Club
- Tasman and Sounds Recreational Fishers' Association (Inc) (TASFISH)
- Soundfish
- Mr W. Hartley
- Ngai Tahu Seafood – (Ngai Tahu)
- Hokianga Accord, Option4, New Zealand Sport Fishing – (HOSF)
- NZ Federation of Commercial Fishermen (Inc) – (Federation)
- New Zealand Seafood Industry Council Limited – (SeaFIC)
- Te Ohu Kaimoana – (Te Ohu)
- NZ Recreational Fishing Council – (NZRFC)

12 Support for any particular option varied. Mr Hartley, the Kaikoura Boating Club, NZRFC and TASFISH supported Option 1. Soundfish did not support any particular option but advocated a precautionary approach to TAC setting. Ngai Tahu and Te Ohu generally supported Option 2. Ocean Fisheries supported Option 3. SeaFIC did not explicitly support any option but advocated generally for an increase in the TACC and this position was supported by the Federation. HOSF supported a TAC lower than the status quo.

13 Submissions are attached as Volume Two.

Biological Characteristics of HPB

14 HPB are widely distributed around New Zealand from the Kermadec Islands in the north to the Auckland Islands in the south, generally over rough ground, from the central shelf (about 100 m) to the shelf edge and down the upper slope.

15 Both HPB species are long-lived. HPB mature sexually between 10 and 13 years old and may live in excess of 60 years (Francis et al. 1999)2. Natural mortality (M) may be 0.1 or less (Francis et al. 1999)

16 Tagging studies have shown movement of HPB 3 into, and out of, Cook Strait. While migration patterns are little known or understood, they are probably related to spawning.

17 Current HPB stock boundaries are based on Fishery Management Areas and are unlikely to reflect natural stock boundaries. While electrophoretic studies suggest that separate stocks of HPB could occur, the key points listed below suggest that either each stock is moderately mobile, or that, there is essentially only one stock (of each species) with some small geographic or temporal genetic differences:

- The genetic heterogeneity of Cook Strait HPB;
- Seasonal movements of HPB through the Cook Strait area;
- Moderately long-distance movements of some tagged HPB;
- The presence of both species on open ground; and
- The eventual recovery of heavily exploited reefs.

18 HPB species are long-lived, slow growing and, when mature, can show a strong degree of site fidelity. These features make HPB vulnerable to overfishing; cautious management is therefore advisable in the absence of robust monitoring information.

HPB 3 Fishery

19 The commercial HPB fishery takes both species, but in different proportions by region, depth, fishing method and season, and these have changed over time.

20 The fishery has both a target fishery (setnet, longline and dahn line) and a trawl bycatch component. Principal areas are the setnet fishery around Kaikoura, anecdotally intercepting migrating fish, and the by-catch trawl fishery which is principally in the Canterbury Bight. The fleet is composed largely of small to medium inshore craft.

21 Reported commercial landings have exceeded the TACC by an average of 10% for nine of the last ten years.

22 HPB is a popular target species for recreational fishers. HPB 3 has a recreational daily bag limit of five HPB. The fishery has two discrete parts defined by location and season. South of Pegasus Bay is a summer/autumn fishery largely catching “school” HPB at an average weight of around 7 kg. The fishery north of Pegasus Bay is more active during winter, and is focused around Kaikoura, where the narrowing shelf concentrates the seasonally migrating HPB. This allows for better fishing access and improved targeting of HPB. The average size is around 15 kg.

2 Francis MP., Mulligan KP., Davies NM., Beentjes MP. 1999. Age and growth estimates for New Zealand häpuku, *Polyprion oxygeneios*. Fishery Bulletin. 97(2): 227–242.

23 Available recreational survey estimates of HPB catch in HPB 3 are not robust. The maximum and minimum estimates across the surveys range from 10 t up to 293 t with co-efficients of variation (CVs - a measure of data variability) of 40 to 50%. While the 2009 MFish Plenary advises that the 1999/2000 harvest estimates are implausibly high for many important fisheries, it also advises that estimates should be evaluated with reference to the CV. In the case of HPB 3, this survey supplies a point estimate of 195 t with a CV of 50%.

24 HPB is known to be of importance to Maori. MFish does not have reliable quantitative information on the level of HPB3 Maori customary catch. Tangata Tiaki have been appointed for most of FMA 3 and they provide the permits for all customary take in the area. However, MFish notes that Tangata Tiaki have only recently been appointed in north Canterbury, and that this is an important area for HPB fishing. Since October 1998, five customary permits have been issued and reported for HPB 3 covering 345 fish plus another 55 kg. However, for the reasons given above, this information does not provide a reliable estimate of customary take as the reporting regime does not cover the entire fishery.

HPB 3 Stock Status

25 The Plenary does not comment specifically on the stock status of HPB 3. Estimates of current and reference biomass are not available.

26 The maximum constant yield (MCY) for all HPB stocks, excluding HPB 4 and HPB 5, is estimated to be 1330 t. MCY is the maximum sustainable yield that can be produced over the long-term by taking the same catch year after year, with little risk of stock collapse. However, there is not a great deal of confidence in the accuracy of catch information (particularly for the foreign fleet) over the period for which the MCY estimate was calculated, therefore, the MCY estimate is highly uncertain.

27 The East Coast South Island trawl surveys do not cover the entire habitat range and have moderate to high CVs (average over all years = 28.17; range 19-35), but may be monitoring relative abundance of settled juveniles in HPB 3. The series varies about the whole-of-series mean and error bars overlap (refer to Figure 2). The mean of the recent data series (2007-2009) is slightly higher than for the earlier series (1991-1996), however, the number of data points in the recent series is small.

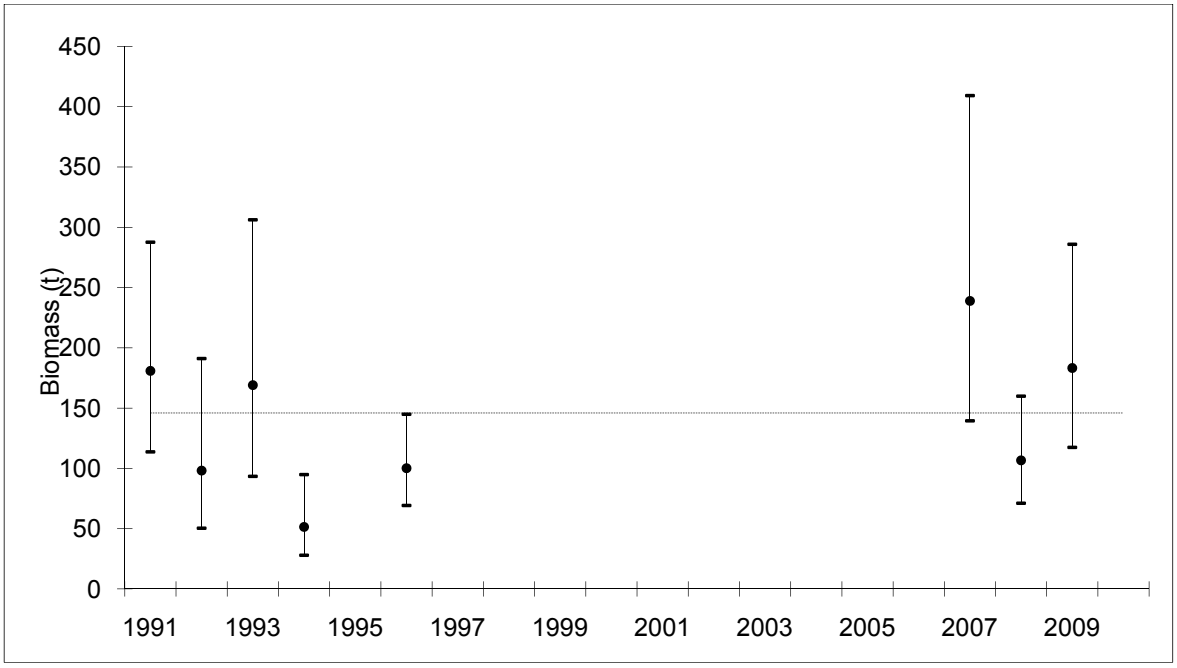


Figure 2: Biomass estimates ±95% CI (estimated from survey CVs assuming a lognormal distribution) and the time series mean (dotted line) from the East Coast South Island trawl survey

28 Based on this information, there is some indication the juvenile population, at least in the area covered by the trawl survey, is stable, however, it is not known how well the survey is sampling HPB 3, nor is there any effort data to inform this assumption.

29 Further, and most importantly, there is nothing known about the stock recruit relationship. If the trawl survey is monitoring juvenile abundance (and there is no certainty it is doing that) trends in juvenile abundance may not be an accurate indication of the state of the spawning biomass.

30 It is possible that both HPB 3 species are part of a single New Zealand-wide stock. While information on the status of other HPB stocks is largely absent, there is information from the HPB 5 fishery that indicates the percentage of mature fish (older than 10 years) has declined from 19% in the 1990s down to 8% currently. Whether this is a result of changes in fishing behaviour or abundance of adult fish is unknown. While the implications of this information are unknown, they are not positive indicators for the sustainability of HPB stocks, given the uncertainty in stock structure.

31 The level of the stock that can produce the maximum sustainable yield (BMSY) is unknown and is unable to be reliably estimated using the best available information.

Management Options

32 MFish proposed the following options in the IPP to set the TAC, TACCs and allowances for HPB 3:

Table 1: Management Options proposed in the IPP

Stock	Option	TAC	Maori customary allowance	Recreational allowance	Other sources of mortality	TACC
HPB 3	**1**	537.6	1	195	6.5	335.1
HPB 3	**2**	553	1	195	7.0	350
HPB 3	**3**	573.5	1	195	7.5	370

Total Allowable Catch

33 The current status of HPB 3 in relation to the level of the stock that can produce the maximum sustainable yield (BMSY) is unknown and is unable to be reliably estimated using the best available information. In such circumstances, you may set a TAC under s 13(2A) of the Fisheries Act.

34 Section 13(2A) requires you to have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stocks. It requires you to set a TAC –

- using the best available information; and
- that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, $_{BMSY}$.

35 You must not use the absence of or uncertainty in, the best available information as a reason for postponing or failing to set a TAC.

36 In considering the way in which and rate at which a stock is moved towards or above BMSY, you must have regard to such social, cultural, and economic factors as you consider relevant.

Analysis

37 For HPB 3, best available information to inform TAC setting is commercial catch history, trawl survey indices, HPB MCY estimates, recreational catch estimates, Maori customary permit reports and information on HPB biology and behaviour.

38 Anecdotal information from submissions from all sectors also informs the analysis of options in this paper.

39 There is no evidence that any of the options proposed are inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the MSY. The options correspond to either the current TACC, or average landings over the past 10 or 15 years. There is currently no evidence that landings at these levels have adversely affected performance of the fishery.

40 There is, however, a high level of uncertainty in the fisheries information currently available with which to inform TAC setting. The uncertainty includes uncertainty in the MCY estimate which stems from imprecise catch information, uncertainty about the

link between trawl indices, abundance of the spawning stock, and uncertainty about the behaviour of HPB and the structure of HPB stocks. In addition, the biology and life history of HPB suggests that these species are susceptible to overfishing and will be slow to recover if over-exploited.

41 Submissions on the proposed options varied with non-commercial stakeholders generally opposing, and commercial stakeholders supporting, higher TAC options.

42 SeaFIC does not agree with MFish's view that all information available to inform TAC setting has a "very high level of uncertainty". SeaFIC notes that commercial catch is well known, at least since 1986. SeaFIC considers the IPP adopts an overly cautious approach to the setting of a TAC for HPB 3 based on perceived vulnerability to over-fishing. It notes that MFish has placed strong emphasis on the biology and life history of the species.

43 SeaFIC also submits that the biomass estimate from the East Coast South Island trawl survey, which may be an index of juvenile abundance, is stable and possibly increasing in the period 1991 to 2009. This, together with the anecdotal information from commercial fishers (for example, Ocean Fisheries submit that anecdotally this fishery appears in very good health), is evidence that recent catches are not compromising recruitment. SeaFIC submits that to constrain TAC setting to the lowest levels to ensure the lowest sustainability risks does not provide an appropriate balance for utilisation.

44 MFish notes that catch data without information on effort does not provide any information about fish abundance. MFish does not agree that the recommended option is based on an unjustifiably cautious approach. The sustainability risk of options is set out in both the IPP and this paper, as is the value of proposed TACC increases.

45 In addition, the 10-year period of catches exceeding the TACC is equal to/less than the number of years required for hapuku to reach maturity (10-13 years). Because of recruitment lag, adverse impacts of recent catch levels in excess of the TACC, if occurring, would potentially not be observable in catch information over this period.

46 The Southern Inshore Working Group has not reviewed the trawl survey results for HPB 3 in detail, nor has an assessment been made as to what portion of the HPB stock, if any, is being monitored by the survey. The uncertainty in available information and that the biology and life history of HPB are taken into account in the proposed TAC options.

47 SeaFIC also considers there is additional information from un-standardised catch rates of HPB showing an increasing trend in the Kaikoura mixed set net and tarakihi set net fisheries over the last decade. SeaFIC submits that this supports the anecdotal information from the fishers. MFish notes this study cautioned that the CPUE of HPB 3 was unlikely to be informative with respect to abundance trends in that area.

48 SeaFIC submit that given the possibility that the HPB biological stocks may be wide ranging, or possibly single New Zealand-wide stocks, and that yield estimates have only been calculated on aggregate, it is unclear why the catch and TACC of HPB 3 is not set in the wider New Zealand context of HPB catches. At the New Zealand scale, catches have been sustained at 1000-2000 t since the 1930s. Although HPB 3 has been consistently over-caught since 1998/99, under-catch in other HPB stocks means that current catches are comparable to the available yield estimates.

49 MFish notes that no consistent change in effort for the domestic fleet, apart from the war and post-war effect, is known. The foreign fleet effort has varied but the extent of

this variation is unknown. As the extent of this variation is unknown, the MCY estimates need to be viewed with caution. Despite the issues with MCY, the estimates for this wider stock were calculated at 1330 t and the current reported landing for the areas assessed was 1337 t. So if the landings are viewed on a New Zealand EEZ basis, the current TACCs are correct and should not be changed. The total of the TACCs for the areas covered by this MCY estimate 1407 t.

50 Non commercial submitters (HOSF, NZRFC and TASFISH) oppose any TAC that would provide a TACC increase for HPB 3, and submit that catch in excess of the TACC is being used as justification for increasing the TAC without any data on trends in abundance to support it. They submit that the biomass of HPB 3 fish stocks should be increased to achieve greater value and better meet the purpose of the Fisheries Act. They submit that the approach adopted in the IPP incentivises commercial fishers to over-catch as a way of achieving increased catch allocations.

51 MFish accepts that deemed values may not have acted to constrain catch in the past, and acknowledges this as a factor behind recent over-catch. The information MFish is relying on to inform TAC setting is not limited to commercial catch history, but also includes trawl survey indices, HPB MCY estimates, recreational catch estimates, Maori customary permit reports and information on HPB biology and behaviour.

52 TASFISH and NZRFC submit that current HPB boundaries are unlikely to reflect natural stock boundaries and that the stocks in HPB 3 are part of the same stock as HPB 7. Any increase of TACC in HPB 3 will, therefore, negatively impact on the HPB 7 stock.

53 TASFISH and NZRFC submit the current status of the HPB 3 stock in relation to the level of stock that can produce the maximum sustainable yield is unknown and, furthermore, is unable to be reliably estimated using the best available information. They submit that on this basis alone, no increase in the TACC should even be considered.

54 Kaikoura Boating Club submits that they believe HPB 3 to be massively over-fished, with few mature fish remaining in the area. They submit that while reasonable numbers of juveniles pass through the area, the combination of commercial and recreational fishing pressure results in few staying in the area, and those that do stay do not seem to survive long. In addition, they submit that in the past HPB were abundant around Kaikoura, that large HPB could be caught from the shore and that catching HPB has become increasingly difficult in recent years. Mfish notes this anecdotal information and has taken it into account in the proposed options.

55 Mr Hartley, recreational fisher from Kaikoura, emphasises that “groper” is a very important fishery for recreational fishers and must be looked after well.

56 HOSF submit that current biomass, abundance and availability of HPB 3 is not providing for all, and propose an allocation of 200 t to allow for recreational fishing. HOSF are concerned about the level of abundance of HPB 3 and, therefore, the availability of HPB 3 to recreational fishers. They submit that collapsing catch rates indicate a biomass below the level that will deliver the greatest value, and is causing significant loss of social and cultural well-being.

57 Generally, submitters from the recreational sector identified that HPB 3 is a very important fishery to their sector and identified that access has declined as a result of decreasing abundance.

58 Relevant matters for you to take into account in setting or varying a TAC include:

- Any effects of fishing on any stock and the aquatic environment;
- Any existing management controls under the Fisheries Act that apply to the stock or area concerned; and
- The natural variability of the stock.

59 You must also take into account the following environmental principles:

- Associated or dependent species should be maintained above a level that ensures their long-term viability;
- Biological diversity of the aquatic environment should be maintained; and
- Habitat of particular significance for fisheries management should be protected.

60 As the TAC proposals do not exceed the actual recorded landings of HPB 3, it is not anticipated that the proposed TAC (and TACC) options will result in an increase in fishing activity. Therefore, it is not anticipated there will be an increase in impacts on the marine environment or on current measures to mitigate adverse impacts on sea birds and marine mammals.

61 In addition to the existing TACC, a range of management controls apply to the HPB 3 fishery, including commercial reporting requirements, a recreational daily bag limit of five fish per person and a limit of two longlines per recreational boat. The proposed changes to TAC are unlikely to affect these measures.

62 As both the HPB species are long lived and high on the trophic scale there is limited natural variability in this fishery. The most likely source of population variability is fishing mortality.

63 MFish is not aware of any provisions in any statement or plans under the Resource Management Act 1991 that are specifically relevant to setting a TAC for this stock.

64 MFish is not aware of anything in the provisions of management strategies or plans for relevant Conservancies that are relevant to these proposals.

65 HPB 3 does not intersect with the Hauraki Gulf Marine Park. Therefore, there are no relevant considerations under the Hauraki Marine Park Act 2000.

66 MFish is not aware of any fisheries or conservation services, or any decisions not to require fisheries or conservation services, which are relevant to setting a TAC for this fish stock.

67 There is no relevant Fisheries Plan that has objectives that would impact on setting a TAC for HPB 3.

68 In setting or varying sustainability measures, you must also act in a manner consistent with New Zealand's international obligations to fishing and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

69 A wide range of international obligations relate to fishing, including use and sustainability of fishstocks; and maintaining biodiversity (s 5(a)). MFish considers that the management options for HPB 3 are consistent with these international obligations.

70 MFish also considers that the proposed management options are consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (s 5 (b)). Ongoing work is being done within the area covered by HPB 3 to promote policies that help to recognise customary use and management practices.

Options

Option 1 – TAC of 546.6 tonnes based on TACC and current non-commercial catch

71 Under Option 1, a TAC of 537.6 t would be established based on the current TACC (335.1 t), estimates of current catches (including customary and recreational), and other sources of fishing related mortality.

72 Option 1 is the most cautious option; it does not provide for any increased utilisation.

73 This option places greatest weight on the uncertainties regarding the status of the stock and considering the biology and life history of the HPB species. Both species are long lived, slow growing and, when mature, can show a strong degree of site fidelity. All these features make HPB vulnerable to over-fishing. For these reasons, this option is MFish's preferred option.

74 TASFISH, NZRFC, Mr Hartley, and the Kaikoura Boating Club, all representing recreational fishing interests, support Option 1. They submit that:

- Groper is a highly valued recreational fishery and that access to the groper fishery has been significantly constrained by decreasing abundance.
- Any increase to the TACC will only exacerbate access difficulties.
- There is insufficient information to support any increase in fishing pressure and the information that is available is uncertain.
- A cautious approach to TAC setting should be taken.

75 Soundfish are concerned that there is a strong relationship between HPB 3 and HPB 7, which contains Cooks Strait and the Marlborough Sounds and that any management measures in HPB 3 will have flow on effect and impact on stock abundance in HPB 7. While Soundfish do not strongly favour any Option, they recommend a precautionary approach be taken.

Option 2 – TAC of 562 tonnes based on catch information

76 Option 2 proposes setting a TAC of 553 t based on the average commercial landings over the last fifteen years, estimates of current catches (including customary and recreational), and other sources of fishing related mortality. This option would provide opportunity for an additional 15 tonnes to be taken from the fishery when compared to option one.

77 MFish notes that average catch in the commercial fishery has already exceeded the TACC by more than 15 t in three of the last four years, and that trawl survey indices suggest juvenile resident HPB abundance may be stable at existing catch levels. However, there is a high degree of uncertainty around this conclusion. The trawl indices have yet to be classified as reliable for HPB 3. MFish considers this option is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the MSY. However, the uncertainty and risks associated with this option are higher than for Option 1.

78 MFish notes that the biology of HPB species means that should the stock be over-fished, recovery will be slow.

79 Ngai Tahu and Te Ohu support this Option.

Option 3 – TAC of 582.5 tonnes based on recent catch information

80 Option 3 proposes a TAC of 573.5 t based on the average commercial catch over the past ten years, estimates of catch for recreational fishers, customary fishers and other sources of fishing related mortality.

81 Of the three options, Option 3 provides the highest utilisation benefits in the short term. Although catches have recently been at this level, the uncertainty and risk of long term stock decline associated with such catches is higher than for the other options. Given this, the fact that HPB are susceptible to overfishing, and it will be slow to recover if over-exploited, this option is least preferred.

82 Ocean Fisheries support Option 3. It is also presumed from the tenor of the submissions that SeaFIC and the Federation also support this Option. These parties generally submit that MFish has taken a cautious approach without appropriate consideration of utilization benefits. They also submit that anecdotal information from experienced commercial fishers concludes that the abundance of HPB has increased in recent years and justifies an increase in the TAC. SeaFIC contends that the data from the East Coast South Island trawl survey shows a stable or slightly improving abundance of juvenile HPB in the northern half of HPB 3.

Allocation of the TAC

83 When setting any TAC, you must apportion that TAC between the relevant sectors and interests set out under the provisions of s 21 of the Act. Section 21 requires you to allow for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC

84 The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on the best available information.

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Maori Customary Non-Commercial Interests

87 Based on information from customary permits, MFish proposed that 1 t be used as the estimate for Maori non-commercial customary catch but invited further information from tangata whenua and stakeholders to ensure an allowance that appropriately reflects Maori customary fishing under customary regulations is set.

88 Ngai Tahu recommend an increase in the allowance for customary fishing of 10 t as this would enable MFish and Ngai Tahu to more effectively manage and measure non-commercial catch rates for HPB 3.

89 Te Ohu submit that the current level of reporting should not be interpreted as the total customary take, or a reflection of actual customary need. In addition, Te Ohu submit

that in order to progress the proposals in the absence of more robust information, Te Ohu supports the customary allowance of 10 t proposed in the submission by Ngai Tahu.

90 HOSF submit that non-commercial customary interests in HPB 3 encompass far more than the fish recorded on the permit system and those assumed to be taken under the amateur fishing regulations. HOSF submit that a 1 t allowance is meaningless if those fish are not available for catching or being left in the water. Abundance and availability needs to improve in order to provide for customary needs. HOSF also support a customary allowance of 10 t. Soundfish submit that 1 t is likely to be underestimating actual Maori customary catches.

91 HOSF note you are required to have particular regard to Kaitiakitanga and you must allow for non-commercial customary interests, not just fishing. In this regard, Ngai Tahu, the Iwi with Rohe Moana over the area of HPB 3, have identified an allowance of 10 t would meet this situation.

92 MFish notes these comments and acknowledges the limitations in information on customary take. MFish understands that HPB 3 is an important stock for customary fishers. However, MFish does not have reliable quantitative information to suggest a level of customary catch higher than 1 t. MFish will review this allowance as new quantitative information becomes available.

93 Section 21(4) requires that any Mataitai Reserve or closures/restrictions under s 186A to facilitate Maori customary fishing be taken into account. There are four Mataitai reserves, two Taiapure, and one s 186B Rahui within HPB 3. MFish does not consider that these closures have a material effect on allocation of recreational allowance for HPB 3.

Recreational Interests

94 As a basis for consultation and using the best available information, MFish proposed an allowance for recreational take of 195 t, acknowledging that it could vary greatly.

95 Ocean Fisheries submit that, for access reasons, the 195 t for recreational interests seems overstated and they do not believe this figure is accurate.

96 SeaFIC queries use of the point estimate from this survey, given that the Plenary stated that the 1999/2000 harvest estimate "should be evaluated with reference to the coefficient of variation". SeaFIC also notes that:

- The Plenary advised that these estimates were implausibly high for many important fisheries.
- In some fisheries, such as rock lobster fisheries, this data has been dismissed totally from fisheries management decision making.
- A range of plausible options for recreational harvest should have been provided and qualified.

97 Te Ohu proposes that the allowance be reduced. Te Ohu notes the recreational allowance is set at 36.3% of the TAC, but based on information that is "not robust".

98 TASFISH and NZRFC submit that a recreational allowance of 195 t is too low as it would only equate to 0.925 of a HPB per recreational fisher in HPB 3, per annum.

99 Soundfish submit that acknowledged unreliable information on recreational and customary catch corresponds strongly with anecdotal information they have gathered, that indicates respective catch allowances of 195 and 1 t are likely to be under estimating actual catches.

100 Submitters from the recreational sector considered that the recreational allowance was too low, whilst submitters from the commercial sector submitted that an allowance of 195 t was excessive, beyond recreational fishers ability to access and carries a great deal of uncertainty.

101 Whilst MFish acknowledges that the range of uncertainty in the recreational fishing estimate data is 97 to 293 t, without better and less contradictory information, MFish considers the point estimate of 195 t remains the best available information on which to base your decisions on an appropriate allowance for recreational fishers.

Allowance for other sources of fishing-related mortality

102 MFish proposed to include an estimate of 2% of the proposed TACCs to allow for other sources of fishing-related mortality for HPB 3. No allowance is currently set, but there are various potential sources of fishing-related mortality in HPB 3, including:

- Damage to discarded fish caught in line and setnet gear
- Loss of fish while landing to the boat, and loss of small and damaged fish
- The extent of any illegal catch of HPB for commercial sale is unknown but considered possible to occur.

103 SeaFIC submit that some allowance for other sources of fishing related mortality is reasonable for the reasons given. However, SeaFIC further submit that the 2% figure is largely arbitrary and should be justified. SeaFIC suggest a generic framework for these allowances that takes account of the type of fish and types of fisheries would assist. However, no alternative figure was supplied. Therefore, until a generic framework for establishing these allowances is available, MFish believes that the largely arbitrary estimate of 2% of the TACC is considered a reasonable allowance for other sources of fishing related mortality when compared to allowances for other fisheries with similar profiles.

Total Allowable Commercial Catch (TACC)

104 MFish proposed 3 options for the TACC in the IPP as follows:

- Option 1 - 335.1 tonnes based on a TAC of 528.6 tonnes;
- Option 2 - 350 tonnes based on a TAC of 544 tonnes; and
- Option 3 - 370 tonnes based on a TAC of 564.5 tonnes.

105 Ocean Fisheries support Option 3. They also submit they catch 23 tonnes of HPB 3 (average of the last five years) while only holding quota for 1100 kg. They, therefore, are constantly active in trying to purchase ACE for what they consider is generally an unavoidable by-catch. They submit that it is not economic for commercial trawlers to target HPB 3 as bulk landings significantly reduce the price payable to the boat.

106 Te Ohu supports a TACC of 350 t under option 2 but could support 370 t under Option 3 if the recreational allowance is reduced.

107 TASFISH and NZRFC submit the options to increase the TACC should be shelved until allocation to recreational fishers is addressed. They submit adjustments of TACCs

upwards in important shared fisheries should never be looked at in isolation given the negative impact of TACC increases on the ability of other sectors to catch their allocation.

108 Soundfish note reported commercial landings have exceeded the TACC for ten years and ask whether this is as a result of increased abundance causing incidental by-catches to exceed available ACE, poor ACE management not retaining ACE to cover later by-catch, or because deemed values are not set high enough providing an economic margin for fishers after paying deemed values. Soundfish also submit that they have information of port prices for HPB of up to $8.00 green weight per kg.

109 Kaikoura Boating Club submit that the economic value derived by recreational fishers ($/kg) appears to be far in excess of any commercial return.

110 The increase in value from the fishery from the various TACC options is set out in Table 2. Values shown are based on the species average port price supplied in submissions of $4.39 per kg.

111 MFish notes that deemed value charges for HPB 3 have exceeded $100,000 for three of the last five years and that this represents a significant cost on the fishery.

Table 2: Proposed TACCs (t) and corresponding change in annual economic return ($) for HPB 3

Option	Proposed TACC	Potential additional revenue over status quo
1	335.1	nil
2	350	$65,850
3	370	$153,650

Other management measures

Deemed values

112 MFish proposes you increase the deemed value rates for HPB 3 to an annual deemed value rate of $2.80, and an Interim Deemed value of $2.30.

113 Under s 75(1) of the Act, you are required to set interim and annual deemed value rates for each quota management stock. Section 75(2A) requires you, when setting deemed value rates, to take into account the need to provide an incentive for every commercial fisher to acquire and hold sufficient annual catch entitlement (ACE) in respect of each fishing year that is not less than the total catch of that stock taken by the commercial fisher.

114 MFish developed a Deemed Value Standard in 2007 to set out a process for managing the setting, reviewing and amendment of deemed value rates. This standard is available to view on the MFish Infosite website3.

115 The approach adopted in the Deemed Value Standard is to set deemed values for a fish stock between the ACE price and landed price. This approach creates an economic incentive for fishers to act appropriately and balance any over-catch against ACE, if ACE is available. Alternatively, if ACE is not available, this approach creates an economic incentive to land and record any over-caught fish rather than discard them at sea.

116 To some extent, the current recorded landings in excess of the TACC are a reflection of the deemed value regime in place for HPB 3. To protect the TACC, the HPB 3 deemed values regime needs to be modified. There are three courses of action available. Increase the deemed value; lower the point for the onset of ramping (the standard ramping rate applies to HPB 3); or, increase the interim deemed value to 90% of the annual deemed value. It should be noted that any of these actions may encourage less accurate reporting if HPB is an unavoidable by-catch species and there are barriers to the flow of ACE from fishers targeting HPB species and fishers taking HPB as by-catch.

Table 3: Current ACE Price, Port Price and Deemed Value ($) for HPB 3

Stock	ACE Price	Port Price	Deemed Value
HPB 3	$1.24	$3.07	$2.30

117 Table 3 lists the MFish held ACE price and port price, however, these values fluctuate significantly depending on a range of factors including how the fish is caught and/or how it is marketed. MFish proposed the deemed value options shown in Table 4. For all options, MFish recommends retaining standard ramping provisions.

Table 4: Proposed Interim and Annual Deemed Value ($) for HPB 3 from IPP

Option	Interim Deemed Value	Annual Deemed Value
A (*status quo*)	$1.15	$2.30
B	$2.00	$2.50
C	$2.30	$2.80

3 http://fs.fish.govt.nz/Page.aspx?pk=119

118 TASFISH and NZRFC note that the Minister is required to set deemed value rates that will provide incentive for every commercial fisher to acquire and hold sufficient ACE that it is not less than the total catch of that stock taken by the commercial fisher.

119 TASFISH and NZRFC submit that the policy of having a deemed value rate of somewhere between the ACE and the port price has not worked in HPB 3 as, since 1998-99 fishing year, the TACC has been exceeded in 10 of the 11 years.

120 To further ensure ACE is not exceeded, TASFISH and NZRFC submit that all deemed values should be set at a minimum of three times the port price.

121 TASFISH and NZRFC submit that even when the deemed value rate provides this incentive, TACCs continue to be exceeded. Furthermore, the fish receiver or processor, who in most cases is the quota owner, processes the catch, adds value to it and still makes a profit from it.

122 SeaFIC note that the MFish 2010 port price for the stock is $3.47 per kg, significantly lower than the species average of $4.39 per kg. Applying the Ministry's principle of pricing deemed values off ACE and port price, the range would be between $1.35 and $2.78 per kg. The upper end of the range sits below some other HPB stocks. Whilst it cannot be proven that the current deemed value relative to the port price is resulting in the over-catch, it is likely that the current deemed value is not impacting on profitability to constrain catch.

123 SeaFIC submit they can support $2.80 per kg as proposed if the TACC is increased as this should act to deter over-catch. However, if the TACC is not increased as proposed, the current regime should prevail on the basis that there is no evidence to not support a TACC increase and the increased deemed value serves only to increase the revenue to Government.

124 Ocean Fisheries strongly support retaining the existing interim and annual deemed values. Ocean Fisheries do not believe an increase in deemed values is justified as HPB 3 is caught significantly as a by-catch and that, therefore, deemed values does not play a big role in reducing the amount of HPB 3 caught or landed. They consider that in their case HPB 3 is seen as an unavoidable by-catch and, therefore, an operational overhead. Ocean Fisheries submit that an increase in deemed value will only increase the negative feelings towards the system, and make dumping of good fish a more realistic option to those fishermen who are already averse to paying deemed value.

125 Ngai Tahu also support an increase in the interim and annual deemed value rates for HPB 3 to $2.00 per kg and $2.50 per kg, being Option 2 of the deemed value options.

126 Te Ohu do not support an increase in deemed values unless the TACC is increased to 370 t.

127 Setting a deemed value regime for HPB 3 is problematic, as it is evident that a variety of prices are available in the market, and while the newly revised MFish Port Price is $3.47 per kg, prices of between $4.39 and $8.00 per kg have been cited by submitters. Anecdotally, MFish is aware that some markets may pay more than these values on the day. This situation does create an incentive to fish on deemed values for fishers able to obtain higher value for their catch.

128 Given the prices supplied by submitters, it is clear that even at the highest option available, $2.80 per kg, the proposed deemed values regime will only be partially effective in encouraging fishing under ACE, while will encourage landing of by-catch.

Recommendation

129 MFish recommends that, for the HPB 3 fishery, for the fishing year commencing on 1 October 2010, you:

EITHER

a) **Agree** to set a TAC of 537.6 t (MFish preferred option) and within this:

i) **set** an allowance for customary fishing of 1 t;

ii) **set** an allowance for recreational fishing of 195 t;

iii) **set** an other sources of fishing-related mortality at 6.5 t; and

iv) **retain** a TACC of 335.1 t.

OR

b) **Agree** to set a TAC of 553 t and within this:

v) **set** an allowance for customary fishing of 1 t;

vi) **set** an allowance for recreational fishing of 195 t;

vii) **set** an other sources of fishing-related mortality at 7 t; and

viii) **increase** the TACC from 335.1 t to 350 t.

OR

c) **Agree** to set a TAC of 573.5 t and within this:

ix) **set** an allowance for customary fishing of 1 t;

x) **set** an allowance for recreational fishing of 195 t;

xi) **set** an other sources of fishing-related mortality at 7.5 t; and

xii) **increase** the TACC from 335.1 to 370 t.

AND

d) **Agree** to increase the interim deemed value rate from $1.15 to $2.30

AND

e) **Agree** to increase the annual deemed value rate from $2.30 to $2.80

ATTACHED BLADDER KELP (KBB3G, KBB4G)

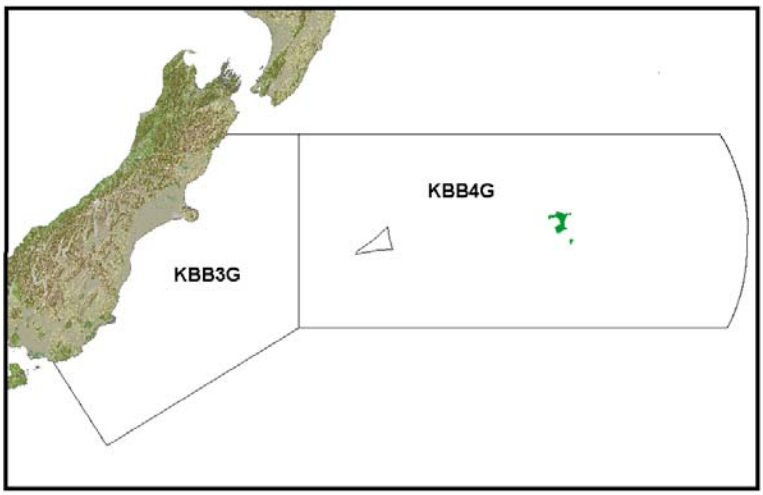


Figure 1: Quota Management Areas for attached bladder kelp

Executive Summary

1 Attached bladder kelp (*Macrocystis pyrifera*) will be introduced to the Quota Management System (QMS) in Fisheries Management Areas 3 (FMA3) and 4 (FMA4) on 1 October 2010. The Quota Management Areas (QMAs) for these stocks are defined as KBB3G and KBB4G, respectively (Figure 1). Prior to introduction you are required to set Total Allowable Catches (TACs), Total Allowable Commercial Catches (TACCs), sector allowances, deemed value rates, and consider additional harvest management measures.

2 MFish considers that the imposition of a TAC in isolation of any other management controls risks potential adverse effects from harvesting. The level of risk increases with higher TAC levels. In order to manage this risk MFish has consulted on a range of additional harvest management measures (i.e. Maximum cutting depth, Finer spatial scale reporting, Maximum canopy removal, Maximum canopy harvesting frequency, and Maximum canopy harvest width) that would complement the TAC.

3 MFish considers implementation of some of these additional harvest management measures would reduce the potential adverse effects from harvesting on localised areas and associated and/or dependent species, and enable greater utilisation. MFish's preferred option is to implement the Maximum cutting depth and Finer spatial scale reporting management measures to support the entry of KBB3G and KBB4G to the QMS.

4 If you choose to implement MFish's preferred additional harvest management measures, MFish recommends a TAC of 1239 t for KBB3G and 274 t KBB4G on the basis that:

a) Best available information suggests these stocks are considered to be near virgin biomass levels and are likely to sustain higher catch levels than present.

b) Bladder kelp forests are amongst the most productive marine communities in New Zealand, play a significant ecological role within the marine ecosystem and naturally experience large fluctuations in abundance both spatially and temporally. The additional management measures should help to protect their

function and provide additional information for future management.

c) The recommended TACs are unlikely to have an adverse impact on the sustainability of the stocks in either QMA.

d) The recommended TACs would not have an adverse impact on customary and recreational utilisation opportunities as attached bladder kelp is generally not harvested by non-commercial fishers.

e) The recommended TACCs would provide industry with greater harvest opportunities from the resource to derive greater economic return, while reflecting the developing nature of the fishery.

f) There is strong support from the majority of submissions to proceed with a cautious proving up of the fishery levels until current robust stock assessment information becomes available and appropriate harvesting strategies can be developed.

5 However, given the uncertainty in current stock biomass, bladder kelp's natural variability, the importance of bladder kelp to the marine ecosystem, and the lack of information on potential adverse effects from harvesting, you may choose to proceed more cautiously and implement a lower TAC. Other options are included in this paper on this basis.

6 If you choose not to implement MFish's preferred additional harvest management measures, MFish recommends a TAC of either 41.2 or 18.2 t in KBB3G, and either 26.2 or 2.2 t in KBB4G due to uncertainty in the information highlighted above and the lack of additional management controls available to mitigate risk of potential adverse effects from harvesting.

7 MFish notes that because KBB3G and KBB4G are not yet in the QMS, there is no annual catch entitlement (ACE) price information currently available to determine market value. On this basis MFish recommends that you set:

i) An annual deemed value rate of $1.00 per kg and an interim deemed value rate of $0.50 per kg;

AND

ii) Standard differential deemed value rates in KBB3G and KBB4G but no overfishing thresholds at this time.

8 MFish considers these deemed value rates will provide incentive for fishers to balance catches with ACE and avoid harvesting on deemed values if landed prices increased during the fishing year. The rates can be adjusted in the future depending on new information received regarding port and ACE prices and catch versus TAC.

Catch Limits, Sector Allowances and Deemed Values

Introduction

9 MFish proposes a range of TACs and associated allowances for KBB3G and KBB4G, incorporating both the options originally consulted on in the Initial Position Paper (IPP) and the options developed based on new information received in submissions (Table 1, shaded options are new):

Table 1 TACs and sector allowances (tonnes, t) for your consideration for KBB3G and KBB4G

Stock		TAC (t)	Customary allowance (t)	Recreational allowance (t)	Other sources of mortality (t)	TACC (t)
KBB3G	**Option 1**	1866	0.1	0.1	1	1864.8
	Option 2	1238	0.1	0.1	1	1236.8
	Option 3	377	0.1	0.1	1	375.8
	Option 4	41.2	0.1	0.1	1	40
	Option 5	18.2	0.1	0.1	1	17
KBB4G	**Option 1**	411	0.1	0.1	1	409.8
	Option 2	274	0.1	0.1	1	272.8
	Option 3	26.2	0.1	0.1	1	25
	Option 4	2.2	0.1	0.1	1	1

10 MFish also proposes the following options for annual and interim deemed value rates:

i) Annual deemed value rate of $4.00 per kg, and an interim deemed value rate of $2.00 per kg; **OR**

ii) Annual deed value of $1.00 per kg and a interim deemed value of $0.50 per kg (MFish preferred option);

AND

iii) Set standard differential deemed value rates in KBB3G and KBB4G but no overfishing thresholds be set at this time.

Consultation

11 Your decisions on the proposed TACs, sector allowances and deemed values for KBB3G and KBB4G are made under s 13, 21 and 75A of the Fisheries Act 1996 (‘the Act') and therefore the consultation requirements of s 12 apply. The IPP was released for 6 weeks of public consultation beginning on 4 March 2010 and was published on the MFish external website. The IPP was also sent to persons and organisations with an interest in review of fisheries’ sustainability measures, and bladder kelp specifically; including tangata whenua, environmental, recreational and commercial stakeholders.

Submissions Received

12 MFish received thirty-two submissions on the IPP from:

- Mark Armstrong (Armstrong)
- Chatham Islands Council (CIC)
- Chatham Islands Enterprise Trust (CIET)
- H N Daymond (Daymond)
- Kotuku Daymond (K Daymond)

- Department of Conservation (DOC)
- East Otago Taiapure Management Committee (EOTMC)
- Forest & Bird
- Graham Harris (Harris)
- Dr. Christopher Hepburn (Hepburn)
- Ada Hough (Hough)
- Dr. Catriona Hurd, Dr. C. Hepburn, Chris Cornwall, Rebecca James, Daniel Pritchard, Derek Richards (Hurd et al.)
- Kāti Huirapa Rūnaka I Puketeraki (Puketeraki)
- Dr. Rebecca McLeod (McLeod)
- Dr. Wendy A. Nelson (Nelson)
- New Zealand Seafood Industry Council Ltd. (SeaFIC)
- NZ Rock Lobster Industry Council (NZRLIC)
- Nga Hapu O Te Uru Forum (NHOTU)
- Ngāi Tahu Seafood (Ngäi Tahu)
- Ocean Organics Ltd. (Ocean Organics)
- option4 and Hokianga Accord (option4)
- Pā Tangaroa Customary Fisheries Forum (Pā Tangaroa)
- Paua Industry Council Ltd. (PIC)
- PauaMAC4 Industry Association Inc. (PauaMAC4)
- Laura Robertson (Robertson)
- Sea-Right Investments Ltd. (Sea-Right)
- Seaweed Association of New Zealand Inc. (SANZ)
- Te Ohu Kaimoana Trustee Ltd. (Te Ohu)
- B J Thomas (BJ Thomas)
- Brian Thomas (Thomas)
- Wellington Recreational Marine Fishers' Association Inc. (WRMFA, endorsed by option4)
- Robert Win (Win)

Summary of Submissions

13 Twenty-four of the thirty-two submissions oppose any of the TAC options proposed for either KBB3G or KBB4G:

a) Eight[4] submissions strongly oppose any commercial harvest of attached bladder kelp, and a number of them request that a TAC or TACC of zero tonnes (t) be implemented in one or both QMAs. These submissions consider that bladder kelp plays a critical role in the coastal and inshore aquatic environment, and there are risks associated with commercial harvesting (e.g. loss of important habitat and food supply; disrupted nutrient cycling processes; increased coastal erosion; direct/indirect adverse effects on associated and/or dependent species).

b) Eight[5] submissions consider that all of the TAC options presented were exceptionally, and unnecessarily, conservative in light of historical biomass information and geographic distribution. Some of these submissions proposed alternative TAC options. For KBB3G, Sea-Right proposes a TAC of 3000 t, while SeaFIC and Te Ohu suggest a TAC of 2000 – 4327 and 800 – 2000 t, respectively. CIC, CIET, Sea-Right and Te Ohu propose a TAC of 1000 t in KBB4G, while SeaFIC suggests a TAC of 1000 – 3000 t.

[4] K Daymond, EOTMC, Forest & Bird, option4 (with support from Hokianga Accord), Puketeraki, NHOTU, Thomas, WRMFA
[5] CIC, CIET, NZ RLIC, PauaMAC4, PIC, SeaFIC, Sea-Right, Te Ohu

c) To support their proposals additional information was provided for assessment, including a research paper[6] estimating biomass in one area of KBB3G, and satellite imagery of bladder kelp beds in KBB3G and KBB4G. The additional information has been assessed by the MFish Science team and incorporated, where appropriate, into revised assessments of stock status.

d) Four submissions[7] request that the setting of TACs be postponed until appropriate management strategies are developed to manage potential adverse effects of harvesting, and information is available to set TACs at an appropriate level that is viable for economic development.

e) Four submissions[8] did not indicate a preference for any of the proposed TAC options nor did they indicate an alternative. Hepburn recommends that you apply a cautious approach in setting TAC and acknowledge the fact that bladder kelp provides the base of many coastal fisheries and has important roles in coastal processes. Hepburn considers that high value fisheries that rely on kelp forest habitats could be compromised by a low value bladder kelp fishery. Ngāi Tahu recommends the TAC for KBB3G be set to provide for a gradual and careful proving-up of the fishery, taking into account the existing fisheries of customary and commercial importance (e.g. paua) and also the ecosystem functions of bladder kelp.

KBB3G

14 Two submissions [Ocean Organics, SANZ] support Option 1 in the IPP (TAC = 377 t), the highest level of utilisation proposed based on the largest estimated yield recorded in Akaroa Harbour.

15 Two submissions [DOC, Robertson] support Option 2 in the IPP (TAC = 41 t); a moderate level of utilisation, which is based on current permit allowances and precautionary expansion of the industry.

16 Five submissions [Hurd et al, McLeod, Nelson, option4, and Win] support Option 3 in the IPP (TAC = 18.2 t); the most conservative level of utilisation, which is based on average harvest under the current permit allowance over the last five years. option4's support for Option 3 with input controls is secondary to its first option of a TACC set at zero tonnes.

KBB4G

17 Two submissions [Ocean Organics, SANZ] support Option 1 in the IPP (TAC = 26.2 t); the highest level of utilisation proposed, which is based on current permit allowances.

18 Seven submissions [DOC, Hurd et al, McLeod, Nelson, option4[9], Robertson, and Win] support Option 2 in the IPP (TAC = 2.2 t); a conservative level of utilisation that is based on the lack of exploitation despite available harvest allowances under the current permit regime.

[6] Fyfe, J., Israel, S.A., Chong, A., Ismail, N., Hurd, C., and K. Probert. 1999. Mapping marine habitats in Otago, Southern New Zealand. Geocarto International 14(3): 17-28.

[7] Daymond, Hough, Pā Tangaroa, BJ Thomas

[8] Armstrong, Harris, Hepburn, Ngāi Tahu

[9] option4 primarily support a TACC set at zero tonnes, but would support Option 2 with input controls.

19 Issues raised by submitters considered by MFish to be outside the immediate scope and intention of the IPP proposals can be found at the end of this document.

Fishery and stock status

20 This section provides a summary of information used to formulate the management options consulted on in the IPP, plus new material received during submissions (i.e. a research paper, and satellite/aerial images). The new material has been assessed by MFish and, where considered robust, used to revise the stock status summaries.

Biological characteristics of bladder kelp (Macrocystis pyrifera)

21 *Macrocystis pyrifera* (bladder kelp) is a large seaweed species that can form extensive undersea forests in coastal waters around the southern North Island, the South Island, Chatham Islands, Stewart Island, and the sub-Antarctic islands. Individual plants can grow up from depths of 30 m to reach the sea surface where they form a floating canopy. The canopies can be extensive, reaching many metres in length along the sea surface. In older plants, over 50% of the plant biomass can be within 1 m of the sea surface.

22 Bladder kelp typically occurs in dense stands and is the predominant habitat forming species in many coastal ecosystems. This seaweed undergoes annual and seasonal cycles of abundance; with canopy growth rates generally highest between autumn and spring. Canopy biomass is typically greatest during winter and lowest during summer (due to die-off from higher water temperatures and lower nutrient levels). Storm events substantially contribute to a decline in surface-canopy biomass. A significant proportion of the annual kelp production becomes free-floating and beach-cast as a result of storm events, seasonal mortality, or senescence.

23 Bladder kelp is one of the fastest growing seaweed species and the fronds of plants have been recorded as growing up to 300 mm per day in length in the Northern Hemisphere .[10] In New Zealand, however, growth rates have been estimated at significantly lower levels (approximately 1 – 15 mm per day).[11][12] Growth rates and peaks in biomass can vary significantly over very short distances (i.e., a few kilometres apart) in response to changes in currents, light, nutrient levels, and other environmental factors. Kelp beds experience decline and regeneration over different spatial and temporal scales, ranging from metres to kilometres, and days to years, respectively.

24 Bladder kelp forests are characterised as being amongst the most productive marine communities in New Zealand. Attached bladder kelp forests play a critical role in coastal, inshore and estuarine environments by providing a wide and diverse range of ecosystem services. These include:

a) Providing important three-dimensional structures that act as nurseries, shelters, and refuge habitats for a wide variety of coastal and inshore species of high social, cultural and economic value (e.g. paua, kina, and butterfish);

[10] North, W.J. 1971. Growth of individual fronds of the mature giant kelp, *Macrocystis pyrifera*. Nova Hedwigia 32: 123-168.

[11] Brown, M.T., Nyman, M.A., Keogh, J.A., and N.K.M. Chin. 1997. Seasonal growth of the giant kelp *Macrocystis pyrifera* in New Zealand. Marine Biology 129: 417-424.

[12] Pirker, J.G. 2002. Demography, biomass production and effects of harvesting giant kelp *Macrocystis pyrifera* (Linnaeus) in southern New Zealand. PhD Thesis, University of Canterbury.
Pirker, J., Schiel, D.R., and H. Lees. 2000. Seaweed Products for Barrel Culture Paua Farming. Foundation for Research Science and Technology's Technology for Business Growth Development project.

b) Providing food for a wide range of species (e.g. paua, kina and butterfish) that support a variety of coastal, inshore and estuarine foodwebs and fisheries;

c) Modifying wave and tidal action, which affects species living in and around kelp beds, as well as coastal physical processes such as erosion, siltation, and sunlight penetration (affecting sheltered and shaded understory species); and

d) Driving primary production and energy cycling that contribute to other near-shore systems including sandy beaches and deepwater ecosystems.

Fishery Background

25 Currently there are two commercial fishers in FMA3 and one commercial fisher in FMA4 authorised to target attached bladder kelp under s 91 permits. From 2004, the permit holders in FMA3 were restricted to a combined competitive catch limit of 20 t of attached bladder kelp per fishing year in Akaroa Harbour only. The single permit holder in FMA4 was restricted to 25 t of attached bladder kelp per fishing year.

26 Over the past six fishing years (2003-09), an average annual catch of 17 t has been reported from FMA3. Annual reported bladder kelp landings ranged between 8 and 17 t, with the exception of the 2008-09 fishing year where approximately 63.5 t was reported. The majority of these catches were taken from Akaroa Harbour. MFish assumes that 20 t of bladder kelp was taken as attached bladder kelp (as per the current competitive catch limit allowed under the s 91 permit) and the remaining harvest was free-floating or beach-cast bladder kelp.

27 A total catch of less than 2 t has been reportedly taken from FMA4 over the past 10 years, with all catches landed between the 1999-00 and 2001-02 fishing years.

Stock Status

28 There is no stock assessment information to determine current stock biomass or sustainable yield of either KBB3G or KBB4G. Therefore, MFish is unable to ascertain whether the current biomass of both attached bladder kelp stocks is stable, increasing or decreasing. Attached bladder kelp stocks are considered to be near virgin biomass levels, as most kelp beds are either un-fished or lightly fished. The NABIS[13] database indicates other hotspots of abundance but there is limited information on the size and density of these other beds, and the information cannot be taken to accurately define local distribution.

KBB3G (East Coast South Island)

29 Estimates of bladder kelp biomass and/or potential yield have been calculated in Akaroa Harbour (Wainui, Ohinepaka, and Mat White Bays)[14] and Pleasant River (Otago)[15]. The Akaroa Harbour study estimated a combined annual harvestable *canopy* biomass between the spring of 1995 and winter 1998 ranging between 0 and 377 t. Approximately 50% of the kelp biomass in Akaroa Harbour is in the canopy at peak biomass times. The total surveyed biomass (*entire* plants) near Pleasant River (November 1995) ranged between 6600 and 9200 t. Therefore, the total historical survey biomass recorded in KBB3G is estimated to be between 6600 and 9954 t.[16]

[13] www.nabis.govt.nz
[14] Ibid no. 9.
[15] Ibid no. 3.
[16] Biomass was calculated by adding the maximum total biomass estimate from Pleasant River to double the maximum canopy estimate from Akaroa Harbour (assumes 50% of the total plan biomass is located in the canopy): 9200 + (2 * 377) = 9954 t

Estimate of Yield

30 Using the best available information, MFish considers that an average Maximum Constant Yield (MCY)[17] can be estimated using an estimate of natural mortality (M) as a substitute for fishing mortality ($F_{0.1}$).[18] Where M = 0.75, MCYs of 1238 and 1866 t are calculated using 6600 and 9954 t as estimates of B_0, respectively.

31 MFish acknowledges that both MCY estimates are much less than the recommended yields by some submissions (e.g. 3000 t). Pirker et al. (2000) suggest each bed in total should not be cropped more than its total biomass in any given year. This analysis assumes 50% of kelp biomass is present in the canopy at peak biomass times and available for harvest, which would equate to annual harvestable yields of 6600 and 9954 t. However, MFish prefers the MCY estimates of 1238 and 1866 t as they are generated from actual growth data rather than assumptions of what the kelp may be able to sustain. Growth and mortality are, however, likely to vary spatially; in the absence of better information, MFish has taken a conservative approach to application of these growth rates to unstudied locations.

KBB4G (Chatham Islands)

32 Areas identified in submissions where significant stands of bladder kelp occur that are likely suitable for harvest include: Pitt Island, Waitangi West (including Two Bung), Owenga and Okawa Point. Aerial images taken between February and May 2005 and ArcGIS software were used to estimate percent cover of each bed and a net area of all beds combined.[19] Accounting for potential inaccuracies in the estimates, available canopy area was calculated to be between 42.53 and 63.82 ha. Using the conversions from Pirker et al. (2000) to estimate forest harvestable biomass from forest harvestable area[20], canopy biomass was subsequently calculated to be between 1460 and 2190 t.

Estimate of Yield

33 Using the best available information, MFish considers that an average MCY can be estimated using the same estimate of M as a substitute for $F_{0.1}$ as for KBB3G. This equates to MCYs of 274 and 411 t using 1447 and 2170 t as estimates of B_0, respectively.

34 MFish acknowledges that both MCY estimates are much less than the 1000 t yield (or TAC) recommended by some submissions. MFish generated the MCY estimates (274 and 411 t) using actual growth data and the same natural mortality estimates derived from Akaroa Harbour (KBB3G) rather than assumptions of what the kelp may be able to sustain. Although the Chatham Islands are more exposed than Akaroa Harbour, the use of maximum age data from Akaroa Harbour in KBB4G is likely to predict a conservative MCY (i.e. less MCY than might be generated using a lower maximum age likely occurring in the KBB4G). Data on growth and mortality from the Chatham Islands would be preferable to use in this calculation, but does not presently exist.

[17] MCY = 0.25 * $F_{0.1}$* B_0, where B_0 = virgin biomass

[18] M was calculated from the mean survival rate (S) for four different size classes of attached bladder kelp as estimated in Pirker (2002). When the mean S is calculated (across all size classes), an estimate of M = 0.75 is derived by solving for the exponential relationship between mortality and age.

[19] MFish thanks Maurice Wills at Environment Canterbury for information on the dates for specific images, the DOC Wellington Hawkes Bay regional area office and Paul Hughes for technical assistance.

[20] Forest harvestable area (m^2) * 0.00343 = forest harvestable biomass (tonnes), where 1 ha = 10 000 m^2

Areas of Uncertainty

35 MFish considers the methods used to estimate biomass and yield are satisfactory but:

a) The Akaroa Harbour survey provides only seasonal point estimates of harvestable biomass between 1995 and 1998, with the 377 t estimate being the highest and 0 t being the lowest.

b) The Pleasant River survey provides only a snapshot of total biomass for one bed in two years. Fyfe et al. (1998) also noted a significant reduction in bladder kelp density, and differences in biomass, between November 1995 and November 1996.[21]

c) The bulk of our KBB3G biomass estimate is from the one point estimate taken from Pleasant River. There is a risk that potential yield calculated from a relatively high or low biomass, would equates to either an over- or underestimate of sustainable take.

d) However, estimated biomass in Akaroa Harbour in November 1995 (when biomass was calculated in Pleasant River) was intermediate compared to the range seen from October 1995 to June 1998.[22] Growth over time at different sites within Akaroa Harbour is correlated. Assuming the correlation is true over larger scales, the snapshot biomass from Pleasant River is unlikely to be at either extreme (compared to the 2.5 years of data available from Akaroa Harbour).

e) The biomass estimates for KBB4G were estimated from aerial images taken in 2005 are historical and enable only point estimates of harvestable biomass to be calculated.

36 All available biomass estimates are historic and do not provide an indication of biomass at a FMA level; however, the kelp beds are considered to be much more extensive than what has been surveyed to date and could provide significant harvest opportunities. Extrapolating historical survey data over other areas of known bladder kelp distribution is not ideal when the location, size and density of these other beds are unknown. This is addressed by taking a conservative approach to the current estimates of biomass and yield.

37 Annual biomass variations within and between individual kelp forests necessitates the need for annual stock assessments of targeted beds in the long-term to determine credible biomass and sustainable yield information to ensure continuing sustainability. In the absence of this information MFish recommends setting a cautious catch limit relative to the overall biomass to ensure sustainability.

38 MFish acknowledges industry submissions that consider kelp distribution can be mapped at low cost and reasonable time using aerial photographs, or gathering in situ biomass estimates to support annual stock assessments. MFish supports efforts by industry to identify the location and quantify the size of the kelp beds in KBB3G and KBB4G that can be used to better estimate current available biomass and potential harvestable yield in the future.

[21] The estimated density (algae/m^2) in "closed canopy" beds (i.e. very few gaps in the canopy) decreased from 1.16 ± 0.13 to 0.41 ± 0.05. The estimated biomass decreased by more than 30% from 10639 ± 1566 to 3761 ± 1237 g m^{-2}.
[22] Ibid no. 9.

Management Options

39 There are no long-term studies on the implications of commercial harvesting of attached bladder kelp beds in New Zealand to guide TAC setting. However, MFish has examined international management frameworks for bladder kelp and other similar species to identify measures that may be useful to manage and guide bladder kelp harvesting in New Zealand. A number of submissions cited the lack of information in the New Zealand context as reason to proceed cautiously or postpone the setting of the TACs until more information is available. Although there is insufficient information available to estimate total biomass across the entire QMAs for KBB3G or KBB4G, MFish considers there is sufficient historical information to set introductory TACs for both stocks based on available biomass estimates from surveyed areas and aerial images.

40 In setting or varying sustainability measures, you must act in a manner consistent with New Zealand's international obligations to fishing and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. MFish is not aware of any specific international obligations that would be affected by the proposed TACs and allowances and considers the proposed options are consistent with the obligations relating to the Settlement Act. All proposals seek to maintain good fishing opportunities, or improve stock health and provide utilisation opportunities, for all sectors including commercial and customary Maori.

Total Allowable Catch Setting

41 In setting TACs for KBB3G and KBB4G for the first time, you need to consider whether to set the catch limit under s 13 or s 14 of the Act. In general, TACs are set in accordance with the provisions of s 13(2) of the Act in a manner that would maintain, or move the stock towards, a biomass at or above the level that can support Maximum Sustainable Yield (MSY)[23].

42 Where reliable estimates of $B_{CURRENT}$ and B_{MSY} are not available, s 13(2A) of the Act provides for you to use the best available information to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, B_{MSY}. Section 13(2A) requires you to have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stocks.

43 You must not use the absence of (or uncertainty in) the best available information as a reason for postponing or failing to set a TAC. In considering the way in which and rate at which a stock is moved towards or above B_{MSY}, you must have regard to such social, cultural, and economic factors as you consider relevant.

44 Alternatively, the Act allows TACs to be set under s 14 if the quota management stock is listed on the Third Schedule (i.e. stocks managed with an alternative total allowable catch). A stock can be added to the Third Schedule provided it satisfies one of four criteria specified in s 14(8)(b):

- It is not possible, because of the biological characteristics of the species, to estimate MSY. MFish considers that MSY could be estimated for attached bladder kelp.[24]

[23] Maximum sustainable yield is the largest long-term average catch or yield that can be taken from a stock under prevailing ecological and environmental conditions. It is the maximum use that a renewable resource can sustain without impairing its renewability through natural growth and reproduction.

[24] Using the MCY calculation (which is a proxy for MSY) for New Fisheries, p. 26 of the current plenary document.

- A national allocation for New Zealand has been determined as part of an international agreement. There are no international agreements regarding bladder kelp.
- The stock is managed on a rotational or enhanced basis. Attached bladder kelp is not yet in the QMS and therefore not currently managed on this basis. MFish considers both stocks are well suited to rotational harvest strategies and could be managed this way in the future under a harvest strategy.
- The stock comprises 1 or more highly migratory species. Bladder kelp is not a highly migratory species.

45 SeaFIC considers that the high variability in annual and seasonal biomass, and distribution of bladder kelp (including storm removals), would make it very hard to calculate B_{MSY}. SeaFIC also considers that if only the canopy of bladder kelp beds were harvested then B_{MSY} is not a valid consideration, and that s 14 is relevant to the setting of initial TACs for both stocks. MFish considers TACs of both stocks under s 14 may be preferable; however in the absence of recent information a conservative TAC using a MCY approach is appropriate.

46 MFish considers that given the best available information at this time it is appropriate to set the TACs for KBB3G and KBB4G under s 13(2A) as there are no current biomass estimates for either stock and no rotational harvest strategy in place. A rotational harvest strategy could be considered by quota-holders once quota is allocated. Such an approach has a higher cost but is likely to allow higher levels of utilisation in years where biomass is high.

47 MFish considers the TAC options proposed for both stocks are consistent with your statutory obligations under s 13, with respect to maintaining or moving the stocks to a point at or above a level that can produce the MSY, having regard to the interdependence of stocks, and environmental conditions affecting the stocks (discussed further in the Sustainability Measures – Considerations section).

Sustainability Measures - Considerations

48 Relevant matters for you to take into account in setting or varying a TAC include:

- Any effects of fishing on any stock and the aquatic environment. Research overseas has shown that harvest of bladder kelp canopies does not appear to have significant effects on the bladder kelp beds themselves, but potential effects on associated species are inconclusive.[25] MFish acknowledges that the majority of available research has been conducted off the California coast where the scale and size of bladder kelp beds are much larger and the physical environment different than in New Zealand. MFish notes new information on the potential ecological impacts of bladder kelp harvesting in New Zealand will likely be available in the next three years to support future decision-making (see *Future Information*).

- Any existing management controls under the Act that apply to the stock or area concerned. Entry to the QMS will remove the current hand-gathering method restriction in both QMAs and the restriction constraining harvest in FMA3 to Akaroa Harbour only. No other management controls other than the generic fishing restrictions prescribed under the Act and fisheries regulations will apply.

- The natural variability of the stock. Individual bladder kelp beds demonstrate significant abundance and distribution fluctuations over both time and space in response to storm events, changes in sea temperature, nutrient levels, land run-off, siltation, and variable recruitment and growth cycles. Their vulnerability to other environmental stressors means the effects of fishing may compound biomass variability across different temporal and spatial scales. Some submissions expressed concern about the decline observed in bladder kelp beds in both California and Tasmania over the past decade where multiple stressors are considered to contribute. MFish notes that the decline of the bladder kelp beds in Tasmania and California have been most strongly linked to changes in water temperature, major El Nino episodes, and changes in predator populations (not commercial harvest).[26] This natural variability has been considered in setting the proposed TACs.

49 You must also take into account the following environmental principles:

- Associated or dependent species should be maintained above a level that ensures their long-term viability;
- Biological diversity of the aquatic environment should be maintained; and
- Habitat of particular significance for fisheries management should be protected.

50 Submissions highlighted specific concerns about the potential adverse effects of

[25] For reviews see:
Barilotti, D.C., and J.A. Zertuche-Gonzalez. 1990. Ecological effects of seaweed harvesting in the Gulf of California and Pacific Ocean off Baja California and California. Hydrobiologica 204/205: 35-40.
Dayton, P.K., Tegner, M.J., Edwards, P.B., and K.L. Riser. 1998. Sliding baselines, ghosts, and reduced expectations in kelp forest communities. Ecological Applications 8: 309-322.
Druehl, L.D., and P.A. Breen. 1986. Some ecological effects of harvesting *Macrocystis integrifolia*. Botanica Marina 29: 97-103.
Graham, M.H., Vasquez, J.A., and A.H. Buschmann. 2007. Global ecology of the giant kelp *Macrocystis* from ecotypes to ecosystems. Oceanography and Marine Biology: An Annual Review 45: 39-88.

[26] Edyvane, K. 2003. Conservation, monitoring & recovery of threatened giant kelp (*Macrocystis pyrifera*) beds in Tasmania – Final Report. Report to Environment Australia (Marine Species Protection Program).

harvesting on: rock lobster, paua, kina, yellow-eyed and grey mullet, blue and red cod, butterfish, mackerel, kahawai, and potential indirect effects on Maui, Hector, and Dusky dolphins. No direct scientific evidence is available to either support or refute these concerns; however biogenically structured habitats (which includes kelp beds) can increase overall diversity, abundance, and productivity of a range of species that associate with them, including small fish.[27]

51 MFish acknowledges a lack of FMA-scale information on New Zealand's bladder kelp beds (e.g. distribution, size, growth rates) and the potential effects of harvest on bladder kelp beds themselves; associated and/or dependent species; and other coastal processes.

52 Submitters have raised concern about increased encroachment of the invasive seaweed *Undaria pinnatifida*, as a result of harvesting of bladder kelp and which could modify current community structure and biodiversity. *Undaria* exists along the south east coast of the South Island (KBB3G) but is not currently present in the Chatham Islands (KBB4G). *Undaria* is an opportunistic species and colonises surfaces where little or no macro seaweeds occur. The harvest of attached bladder kelp could promote the emergence of new stands of *Undaria* and may have a localised impact on various native marine flora and fauna species.

- MFish acknowledges that regular disturbance of the seabed or canopy removal of native algal species can result in increased recruitment and establishment of *Undaria* in high densities.[28] While disturbance could occur as a result of natural storm events, this type of irregular disturbance would likely have less impact than regular harvest. *Undaria* appears to establish more prolifically in areas with low diversity or biomass of native macroalgae (e.g. bladder kelp) or where beds have been completely removed.

- Biosecurity New Zealand has relaxed some controls on the removal of *Undaria*, but harvest of *Undaria* growing on natural surfaces is still prohibited, except when part of a control programme. You are advised to consider the risks of exacerbating spread of *Undaria*, which may inhibit recruitment and maintenance of bladder kelp beds and reduce or modify local biodiversity.

53 MFish recognises that bladder kelp is essential to the functioning of coastal, inshore and estuarine ecosystems, and must be carefully managed to ensure long-term sustainability of the diverse range of marine communities it supports. MFish considers these issues can be managed with appropriately set TACs and consideration of additional harvest management measures to address potential interactions or effects on associated and/or dependent species.

54 MFish does not have a clear policy on defining habitats of significance. In this context, no habitats of significance have been identified in either KBB3G or KBB4G.

55 You must also have regard to or take into account certain other matters: (a) any regional policy statement, regional plan or proposed regional plan under the Resource Management Act 1991; (b) any management strategy or management plan

[27] Morrison, M., Consalvey, M., Berkenbusch, K., and E. Jones. 2008. Biogenic habitats and their value to New Zealand fisheries. Water & Atmosphere 16(4): 20-21.

[28] Edgar, G.J., Barrett, N.S., Morton, A.J. and C.R. Samson. 2004. Effects of algal canopy clearance on plant, fish and macroinvertebrate communities on eastern Tasmanian reefs. Journal of Experimental Marine Biology and Ecology 312: 67-87.
Stuart, M.D. 2004. Review of research on *Undaria pinnatifida* in New Zealand and its potential impacts on the eastern coast of the South Island. DOC Science Internal Series 166, Department of Conservation, New Zealand.
Valentine, J.P., and C.R. Johnson. 2003. Establishment of the introduced kelp *Undaria pinnatifida* in Tasmania depends on disturbance to native algal assemblages. Journal of Experimental Marine Biology and Ecology 295:63-90.

under the Conservation Act 1987 that apply to the area and are considered relevant; (c) ss 7 and 8 of the Hauraki Gulf Marine Park Act 2000; (d) any conservation services or fisheries services and any decision not to require conservation services or fisheries services; and (e) any relevant fisheries plan approved under s 11(2A) of the Act.

a) KBB3G and KBB4G include the coastlines that are covered by the Regional Coastal Environment Plan for the Canterbury Region (RCEP) and the Chatham Island Resource Management Plan (CIRMP), respectively. These plans consider the importance of coastal margins to ensure they are protected and secured. Because bladder kelp performs a wave dampening function on some erodible coastlines, consideration should be given to the fact that the RCEP and CIRMP deal with the broader issue of coastline erosion, primarily by restricting development in the coastal hazard zone. You should consider the risks associated with enabling any new activity that could impact on coastal erosion (based on the Government's support for active management of coastal erosion). MFish acknowledges the important wave dampening and current modifying role bladder kelp beds play and considers that harvest can be conducted in a manner that preserves much of the bed structure to retain much of its function as a coastal barrier. MFish supports any efforts by territorial or regional councils to protect coastal margins from erosion and will provide support where possible to ensure the functionality of bladder kelp beds and their contributions to ecosystem services are retained.

b) There are four Department of Conservation Conservancies with jurisdictional boundaries covering KBB3G and one for KBB4G. MFish notes the existence of Pohatu (Flea Bay) marine reserve on the south east of Banks Peninsula. MFish does not consider that the proposed TACs will detract from the intent of any existing or future marine reserve.

c) KBB3G and KBB4G do not intersect with the Hauraki Gulf Marine Park; therefore there are no relevant considerations under the Hauraki Marine Park Act 2000.

d) MFish notes that National Inshore Fisheries Plans are currently in development and seaweeds are a part of this process. MFish expects that the relevant plan would include an assessment of risks to sustainability of the bladder kelp fishery and could incorporate conservation services or fisheries services (e.g. tools to mitigate impacts on the surrounding aquatic environment).

Assessment of Management Options

56 MFish considers none of the options proposed for either stock are inconsistent with your statutory objective of managing either stock at or above B_{MSY} based on likely but unquantified biomass across the wider QMA. However, MFish considers the potential risks associated with adverse effects from harvesting[29] vary considerably across the TAC options.

[29] Adverse effects from harvesting are defined as:
- localised depletion of kelp beds;
- reduced growth rates of kelp plants;
- negative impacts on associated and/or dependent species (e.g. kina, butterfish, mullet) that utilise kelp forests as a food and shelter source (potential for increased competition);
- opportunistic establishment of invasive algae (e.g. *Undaria* sp.);
- cascading trophic effects from kelp plant removal; and
- effects on wave and current action that facilitate the recruitment of planktonic larvae to kelp ecosystems.

KBB3G (East Coast South Island)

Option 1 – TAC 1866 tonnes

57 Option 1 has been developed following the IPP based on information supplied in submissions to calculate a MCY from the highest surveyed estimate of bladder kelp biomass in KBB3G [see *Stock Status*]. This option is much less than the TAC proposed in some submissions (e.g. 3000 t) because the yield estimate is based on actual growth data rather than what the bladder kelp may be able to sustain. MFish notes the following uncertainties and environmental risks under Option 1:

a) The two surveys provide historic seasonal point estimates of harvestable biomass. Bladder kelp beds are highly variable within and between years (as evident in the survey results).

b) The effect of intensity of harvesting at this level in New Zealand has not been investigated and the potential impact on bladder kelp bed recovery, associated and/or dependent species, and ecosystem services is unknown. There is no information available to quantify this risk.

c) Adverse effects of harvesting may result if harvest occurs in area where bladder kelp plays an important role ensuring the long-term viability of associated species (e.g. paua, kina). Research on the potential impacts of harvest has been restricted to assessing short-term impacts of small-scale removal of bladder kelp (in one location only in Akaroa Harbour) on the beds themselves, and some associated seaweed species.[30]

58 In the absence of a harvest strategy or mitigating measures, MFish considers Option 1 poses the largest level of risk regarding potential adverse effects from harvesting. These potential adverse effects may be managed to a significant degree through implementation of additional harvest management measures discussed in *Chapter 2*.

59 Option 1 provides the maximum development opportunity for KBB3G and a minimum 2900% increase in current utilisation levels. Setting a TAC at this level will provide industry with the greatest opportunity to develop the fishery and increase the potential economic value derived from this stock.

Option 2 – TAC 1238 tonnes

60 Option 2 has been developed following the IPP based on information supplied in submissions to calculate a MCY from the lowest surveyed biomass estimate of bladder kelp in KBB3G [see *Stock Status*]. MFish considers the potential for adverse effects from harvesting in localised areas and flow-on effects to other ecosystem services in Option 2 are comparable to those outlined under Option 1, and unacceptable in the absence of a harvest strategy or mitigating measures..

61 Option 2 provides a significant development opportunity for KBB3G and a minimum 1950% increase of current utilisation levels.

Option 3 – TAC 377 tonnes

62 Option 3 was one of the options originally consulted on and was supported by two submissions. Under Option 3, the TAC for KBB3G would be set at 377 t based on

[30] There are no assessments on the implications of timing or frequency of removal, large-scale harvest, or response of beds to harvest across large spatial scales. Investigation on associated and/or dependent species has focused on a few native fauna and invertebrate species. There has been no investigation on potential impacts on fish or other marine species.

the largest historical estimate of sustainable yield recorded in Akaroa Harbour[31].

63 MFish notes there are other areas of kelp abundance within KBB3G (e.g. Pleasant River, Otago) which means this TAC is a conservative limit when applied to the QMA as a whole. The potential for adverse effects from harvesting is considered moderate compared to Option 1 and 2, but still significant in the absence of a harvest strategy.

64 Option 3 would enable a smaller increase in utilisation and development opportunity for KBB3G compared to Option 1 or 2, but still provide for a minimum 600% increase compared to current utilisation levels. Setting a TAC at this level will provide industry with a moderate opportunity to develop the bladder kelp fishery and increase the potential economic value derived from this stock.

Option 4 – TAC 41.2 tonnes

65 Option 4 was one of the options originally consulted on and was supported by two submissions. Under Option 4, the TAC for KBB3G would be set at 41.2 t, which reflects the permit conditions that currently apply (i.e. 20 t), and considers the opportunity for a cautious expansion of the fishery by providing an additional 21.2 t of allowable catch. MFish notes that 63.5 t of bladder kelp was landed during the last fishing year, but assumes that only 20 t of bladder kelp was attached relative to other states (i.e. free-floating or beach-cast).

66 Option 4 is considered to be much lower than the biomass and sustainable yield available across KBB3G, particularly in areas where kelp beds are understood to be sporadically prolific. While the current sustainable yield from Akaroa Harbour has probably fluctuated (either increased or decreased) in response to annual and seasonal variability, MFish considers it is likely to be well in excess of the proposed TAC under Option 4 given the historical abundance of kelp in this area. The potential for adverse effects from harvesting is low under this option, although localised adverse effects are possible if harvest is concentrated in only a few areas.

67 Option 4 would double current levels of utilisation and socio-economic benefit from the stock, but provide for minimal development opportunities compared to Options 1 to 3.

Option 5 – TAC 18.2 tonnes

68 Option 5 was one of the options originally consulted on and was supported by five submissions. Under Option 5, the TAC for KBB3G would be set at 18.2 t, which reflects the average annual commercial utilisation (17 t) of bladder kelp in FMA3 (from 2003-04 to 2008-09) while providing for additional utilisation by customary and recreational sectors, and other sources of fishing-related mortality.

69 Compared with Options 1 to 4, Option 5 poses the lowest risk of potential adverse effects from harvesting. MFish considers the proposed TAC of 18.2 t to be a highly conservative estimate of the sustainable yield that could be harvested from the entire QMA given the sustainable biomass that is likely to be available, and recent commercial utilisation of bladder kelp in KBB3G.

70 Option 5 would reduce current utilisation below the current permit limit on commercial catch (20 t) and therefore reduce socio-economic benefit from the stock.

[31] Ibid no. 9.

KBB4G (Chatham Islands)

Option 1 – TAC 411 tonnes

71 Option 1 has been developed following the IPP based on aerial images taken off the Chatham Islands in 2005 [see *Stock Status*]. This option is much less than the TAC proposed in some submissions (i.e. 1000 t), because of a lack of information on the full extent of potential harvestable biomass, growth rates and natural mortality in KBB4G.

72 MFish notes the following uncertainties and environmental risks under this option:

a) Kelp beds vary considerably spatially and temporally, and the biomass estimates calculated from aerial images provide only a historic point estimate.

b) The effect of intensity of harvesting at this level in the Chatham Islands has not been investigated and the potential impact on bladder kelp bed recovery is unknown. Over the past 10 years (1999-2009), a total catch of less than 2 t has been reportedly taken from the QMA.

c) Adverse environmental effects may result if harvest occurs in area where bladder kelp forms a habitat of significance for fishery management and/or leads to impacts on associated species. There have been no investigations on the potential adverse effects from harvesting in KBB4G.

73 MFish considers Option 1 poses the highest level of risk from potential adverse effects of harvesting, in the absence of a harvest strategy or mitigating measures. The potential adverse effects of harvesting on localised areas and associated and/or dependent species may be managed to a significant degree through implementation of additional harvest management measures discussed later.

74 Option 1 provides the maximum level of utilisation and immediate development opportunity for KBB4G and a minimum 1644% increase of current utilisation levels. Setting a TAC at this level will provide industry with the greatest opportunity to develop the bladder kelp fishery and increase the potential economic value derived from this stock.

Option 2 – TAC 271 tonnes

75 Option 2 has been developed following the IPP based on information supplied in submissions to calculate a MCY using the lower biomass estimate from aerial images of bladder kelp beds off the Chatham Islands in 2005 [see *Stock Status*].

76 MFish considers the risk of adverse effects from harvesting in localised areas and flow-on effects to other ecosystem services in Option 2 are comparable to those outlined under Option 1.

77 Option 2 provides for immediate development opportunities for KBB4G and a minimum 1096% increase of current utilisation levels. Setting a TAC at this level will provide industry with an opportunity to develop the bladder kelp fishery and increase the potential economic value derived from this stock.

Option 3 – TAC 26.2 tonnes

78 Option 3 was one of the options originally consulted on and was supported by two submissions. Under Option 3, the TAC for KBB4G would be set at 26.2 t. This TAC

reflects the commercial catch limit of 25 t that currently applies to KBB4G. This catch limit was prescribed on a s 91 fishing permit held by the only commercial fisher entitled to harvest bladder kelp in FMA 4 under the previous statutory regime.

79 Although there is no stock assessment information available to determine whether a TAC of 26.2 t is sustainable, Option 3 is unlikely to pose a sustainability risk to KBB4G. Potential adverse effects from harvesting could occur if the entire TAC is taken from one or few small areas, but this risk is considered low.

80 Option 3 maintains the current level of utilisation and does not provide for any additional development opportunities for KBB4G.

Option 4 – TAC 2.2 tonnes

81 Option 4 was one of the options originally consulted on and was supported by seven submissions. Under Option 4, the TAC for KBB4G would be set at a nominal 2.2 t. This TAC option originally reflected the:

a) lack of commercial harvesting that has occurred in the area despite permit conditions that would have enabled an annual commercial harvest of 25 t;

b) lack of stock assessment information to set sustainable catch limits; and

c) lack of information regarding which areas in the Chatham Islands could sustain higher levels (and what those levels might be) of bladder kelp removal in light of the seaweed's ecological role in the marine environment.

82 New information provided in submissions identified areas around the Chatham Islands that could sustain higher levels of utilisation and enabled additional options being put forward for your consideration (i.e. Options 1 and 2). Option 4 poses a low risk of localised depletion or consequential adverse effects from harvesting on associated and/or dependent species.

83 Option 4 reduces current utilisation opportunities for KBB4G.

Allocation of the TAC

84 When setting any TAC, that TAC must be apportioned between the relevant sectors and interests set out under the provisions of s 21 of the Act. Section 21 requires you to allow for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

85 The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on the best available information.

Customary Maori and Recreational allowances

86 MFish proposes to set initial customary Maori and recreational allowances of 0.1 t (greenweight), respectively, under all options presented for KBB3G and KBB4G (Table 1). MFish notes non-commercial harvest is unrestricted and any non-commercial fisher can harvest bladder kelp in any state, from any harvest area, and in any quantity.

87 In submissions, option4 opposes a nominal 0.1 t allowance for non-commercial

fishing interests as this fails to recognise that environmental, cultural and social interests vary from area to area and could extend to the entire bladder kelp population. Hough and BJ Thomas also emphasise bladder kelp's importance to the customary sector.

88 For stocks where no customary Maori and recreational harvest estimates are available and where the stock is not considered to be of importance to the customary and recreational sectors, MFish recommends nominal allowances to account for these harvests. MFish did not receive any additional information in submissions regarding amounts of customary Maori and recreational harvest of attached bladder kelp within KKB3G and KBB4G, but acknowledges its importance to the customary sector.

89 When allowing for Maori customary non-commercial interests you must take into account any relevant mātaitai reserve and any area closure or fishing method restriction or prohibition under s 186A. MFish notes there are a number of mātaitai within KBB3G (Mataura River, Puna-wai-Toriki mātaitai) where commercial fishing is prohibited. Additionally, there is a section 186A closure (Kaikoura-Wakatu Quay) where no person may take any species of fish, aquatic life, or seaweed.

90 When allowing for recreational interests, you are required to take into account any regulations that prohibit or restrict fishing in the areas concerned. There are a number of regulations (e.g. marine reserves) within both KBB3G and KBB4G that would affect recreational utilisation of bladder kelp. MFish does not consider that the proposed allowances for recreational harvest will detract from the intent of any existing or future s 311 closures in either KBB3G or KBB4G.

91 MFish contends the proposed 0.1 t allowances for customary Maori and recreational interests, respectively, reflect realistic harvest levels for attached bladder kelp. These allowances can be revised if new information becomes available.

Allowance for other sources of fishing-related mortality

92 MFish proposes to set an initial allowance for other sources of fishing-related mortality of 1 t (greenweight) under all TAC options for KBB3G and KBB4G (Table 1). For stocks where there is no information on the extent of other sources of fishing-related mortality, MFish guidelines provide a nominal allowance to account for this harvest.

93 There is no quantitative information on the quantity of attached bladder kelp taken as incidental bycatch in other target fisheries. While some attached bladder kelp is likely to be collected as a result of using fishing gear over kelp beds, this catch is likely to be negligible. The vast majority of seaweed taken as bycatch in various fishing gear would comprise of free-floating material. MFish considers there is no or negligible illegal catches of attached bladder kelp.

94 Some submissions consider that the potential use of mechanical gathering methods could result in an increased mortality of attached bladder kelp. MFish considers that standard harvesting practices used overseas restrict harvest to the canopy alone, which does not result in mortality of the entire plant. MFish considers that if harvest was restricted to the canopy mortality from fishing-related activity would remain small. If mechanical harvesting increases in prevalence and information suggests other sources in mortality is increasing, adjustments to the allowance can be made in the future.

95 MFish considers the proposed 1 t allowances reflect a realistic level of other sources

of fishing-related mortality and can be revised if new information becomes available.

Total Allowable Commercial Catch (TACC)

96 Sea-Right considers that the harvest of attached bladder kelp and enhanced product development will lead to substantial local and export industries, and suggests an initial market value of $2 or $4 per kg. MFish has used this information with general reported market value for seaweed to estimate potential economic returns from each option (Tables 2 and 3).

KBB3G (east coast South Island)

Table 2: Proposed TACCs (t) and corresponding estimated economic return ($ millions) for KBB3G

	Proposed TACC (tonnes)	Potential revenue ($ millions)
Option 1	1864.8	3.7 – 7.5
Option 2	1236.8	2.5 – 5.0
Option 3	375.8	0.75 – 1.5
Option 4	40	0.08 – 0.16
Option 5	17	0.03 – 0.06

97 Maximum commercial catch from KBB3 to date has been 63.5 t (20 t assumed to be attached bladder kelp). Under Option 1, the TACC would create the largest incentives for quota-holders to invest and develop the fishery based on the guaranteed harvest level. This incentive is lower under Option 2 but provides for a substantial increase in commercial development potential compared to current catch limits. Under Option 3, the TACC will create a moderate incentive for quota-holders to invest and develop the fishery based on the guaranteed harvest level. Option 4 provides a conservative approach, compared to Options 1 to 3, to develop a long-term sustainable bladder kelp fishery within KBB3G, and gives quota-holders moderate-low incentive to invest and rationally develop this fishery resource. Option 4 would maintain current levels of commercial utilisation and socio-economic benefit from the stock based on the existing permit condition, and provide for conservative expansion across the entire QMA. Under Option 5, the TACC reduces potential commercial utilisation compared to that currently allowed under the s 91 permit, and provides the lowest economic potential relative to the other options presented. Under lower TACC options, fishers may still be incentivised to invest in the fishery on the basis of future potential, subject to additional information being provided to support higher catch limits in the future. The allocation of rights provides certainty of future access and a share of any future catch increases.

98 MFish notes that it is unlikely that the proposed TACCs under Option 1 or 2 would be harvested in full in 2010-11 given recent commercial catches and a lack of established markets. All the options are unlikely to affect access by other fishing sectors because customary and recreational usage is considered low at present and generally concentrated on beach-cast or free-floating bladder kelp rather than attached.

KBB4G (Chatham Islands)

Table 3: Proposed TACCs (t) and corresponding estimated economic return ($ millions) for KBB4G

	Proposed TACC (tonnes)	Potential revenue ($ millions)
Option 1	409.8	0.82 – 1.64
Option 2	272.8	0.55 – 1.09
Option 3	25	0.05 – 0.10
Option 4	1	0.002 – 0.004

99 Under Option 1, the TACC would create the largest incentive for quota-holders to invest and develop the fishery. Option 2 is smaller than Option 1 but would still provide incentive for quota-holders to invest and immediate development opportunity for stakeholders.

100 Under Option 3, the TACC maintains the current catch limit available and does not provide for development opportunities and associated socio-economic benefits. Under Option 4, the TACC for would be set at 1 t, reducing any opportunity for quota-holders to derive economic value. The proposed TACC would provide minimal incentive for quota-holders to invest and rationally develop this fishery resource, or opportunities for collective action to help identify and manage any adverse effects of fishing.

101 Sea-Right considers Option 3 and 4 too small to allow investment in new business opportunities and would not provide any additional business opportunities to support or maintain the local community. Sea-Right notes that their current individual catch entitlement (ICE) for KBB4 is 25 t based on their long-standing permit and considers their ICE allocations cannot be prorated down.

102 MFish considers it unlikely that the commercial sector will harvest the proposed TACCs in Option 1 or 2 in full in 2010-11 based on historical commercial catches and a lack of established markets. Option 1 provides the largest level of utilisation and an opportunity for stakeholders to develop the fishery. All the options are unlikely to affect access by other fishing sectors because customary and recreational usage generally utilises beach-cast or free-floating bladder kelp rather than attached.

Other Management Measures

Deemed values

103 Under s 75(1) of the Act, you are required to set interim and annual deemed value rates for each quota management stock. Section 75(2A) requires you, when setting deemed value rates, to take into account the need to provide an incentive for every commercial fisher to acquire and hold sufficient annual catch entitlement (ACE) in respect of each fishing year that is not less than the total catch of that stock taken by the commercial fisher.

104 MFish developed a Deemed Value Standard in 2007 to set out a process for managing the setting, reviewing and amendment of deemed value rates.[32] MFish considers the options proposed are consistent with the criteria outlined in the standard.

105 MFish acknowledges that there are small niche markets for high quality product and

[32] http://fs.fish.govt.nz/Page.aspx?pk=119

a broader "general use" market for seaweed. The estimated landed price for bladder kelp can range between $2.00 and $20.00 per kg. In this deemed value analysis MFish is using an estimated landed price for bladder kelp of $2.00 per kg, which is based on the general reported market value for seaweed. Based on this information, MFish proposed two options to set the annual and interim deemed value for attached bladder kelp:

Option 1	Set an annual deemed value rate of $4.00 per kg and an interim deemed value rate of $2.00 per kg.
Option 2	Set an annual deemed value rate of $1.00 per kg and an interim deemed value rate of $0.50 per kg.

Option 1

106 Option 1 sets the annual deemed value rate at twice the estimated landed price ($2.00 per kg) for the 2010-11 fishing year. In adopting this approach, MFish proposes setting an interim deemed value rate at $2.00 per kg (excluding GST) and an annual deemed value rate of $4.00 per kg (excluding GST) for the KBB3G and KBB4G stocks for the 2010-11 fishing year.

107 Option 1 treats attached bladder kelp as if it is in the "high-value single stock" fish stock category as set out in the deemed value review standard. Besides being an ecologically valuable species, attached bladder kelp has the potential to enter into high quality niche markets potentially making it a highly valuable fishery. SeaFIC considers Option 1 confuses the meaning of value in the deemed value policy which relates to high monetary value not high ecological value.

108 Te Ohu supports Option 1 to set the annual and interim deemed value rates at $4.00 and $2.00 per kg, respectively. Te Ohu is unaware of any good reason for overharvesting without ACE. CIET considers the interim deemed value rate be set as high as possible at $4.00 per kg.

109 MFish notes that attached bladder kelp is not yet in the QMS, meaning that there is no ACE price information available that can be used to determine the market value of attached bladder kelp and set deemed value rates.

Option 2

110 Option 2 sets the annual deemed value rate at 50% the estimated landed price ($2.00 per kg) for the 2010-11 fishing year. In adopting this approach, MFish proposed setting an interim deemed value at $0.50 per kg (excluding GST) and an annual deemed value of $1.00 per kg (excluding GST) for the KBB3G and KBB4G stocks for the 2010-11 fishing year.

111 This option treats attached bladder kelp as if it is in the "all other" fish stock category as set out in the deemed value review standard. Fishstocks in this category are to have their annual deemed value rate set above ACE price and below landed price to encourage fishers to balance their catch with ACE rather than pay deemed values.

112 SeaFIC and PIC support Option 2 to set the annual and interim deemed values at $1.00 and $0.50 per kg, respectively. MFish considers Option 2 an appropriate way to provide incentive for fishers to balance catches with ACE and avoid harvesting on deemed values if landed prices increased during a fishing year. The rates can be adjusted depending on future information on catch versus TAC, port price and ACE price following introduction into the QMS.

Differential deemed values

113 For both Options 1 and 2, MFish proposes to apply standard differential annual deemed value rates to KBB3G and KBB4G for the 2010-11 fishing year. MFish proposes not to set an overfishing threshold for these seaweed stocks, unless future monitoring of catches suggests that this is required. SeaFIC does not support the application of differential deemed values for these stocks, and considers there should be no differentials in order to encourage the market to develop from low TACCs.

114 MFish notes that deemed value rates for KBB3G and KBB4G will be adjusted, as required, when information about ACE price becomes available. Currently deemed value rates for all species are reviewed on an annual basis. When information becomes available on the ACE price for the bladder kelp stocks, this will be incorporated into the annual deemed value review process to ensure the correct deemed value rates are set for all bladder kelp stocks.

Future Information

115 The majority of submissions have indicated their support for development of a research programme that examines long term distribution and abundance, harvesting relationships between attached and free-floating bladder kelp, effects of harvest on associated and/or dependent species, baseline information on bladder kelps beds (e.g. growth rates, size, productivity, post-harvest recovery).

116 MFish notes that ongoing and future research will further inform the ecological effects of kelp harvesting. This includes a recently funded 3-year research project by the Foundation for Research, Science and Technology (planned in consultation with both MFish and industry) is set to begin in 2010 that will examine the potential ecological effects of harvesting bladder kelp. This research will investigate potential effects that have been examined overseas as well as trophic impacts, which don't appear to have been studied elsewhere. These types of studies will provide additional information that can be used by MFish to better assess risk associated with potential adverse effects of harvest, aid industry in the development of their own research programmes, and assist in future assessments of bladder kelp biomass, distribution, and potential yield.

Harvesting strategy and implementation frameworks

117 Some submissions express concern about any level of utilisation of attached bladder kelp due to the potential risks surrounding adverse effects of harvesting on localised bladder kelp beds as well as dependent and/or associated species.

118 The majority of submissions did not support uncontrolled harvest, and a number of submissions highlighted the need for a pre-established management plan, sustainable harvesting strategy, or other harvest (input) controls before any TAC was set or considered. Other submissions consider the introduction and setting of any TAC for attached bladder kelp should be postponed until suitable management strategies (management framework and harvesting strategies) are implemented to enable TACs to be set at an appropriate level that is viable for economic development.

119 MFish agrees that management of the bladder kelp fisheries by output controls alone will not effectively manage potential adverse effects of harvesting on localised kelp beds or associated and/or dependent species across smaller spatial and temporal scales. As noted in the previous section, relying on output controls would also likely restrict the amount of utilisation provided.

120 Submissions provided a number of harvest management measures considered suitable to mitigate potential risks associated with harvest. Consequently, MFish consulted on some of the proposed harvest management measures and potential implementation frameworks.

HARVEST MANAGEMENT MEASURES

121 MFish considers that management of the bladder kelp fisheries by output controls alone will not effectively manage potential adverse effects from harvesting[33] without significantly restricting the amount of utilisation provided. As a consequence, MFish consulted on the following additional management controls.

Summary of Proposed Management Options

Option 1: Maintain the *status quo* and do not institute any additional harvest management measures.

Option 2: Implement one or more of the following harvest management measures:

a) **Maximum cutting depth -** Institute a maximum cutting depth of no more than 1.2 metres;

b) **Finer spatial scale reporting** – Require the latitude and longitude location of each harvested kelp bed to be reported

c) **Maximum canopy removal -** Allow no more than 50% of any one kelp bed's canopy biomass to be harvested over a period of less than 6 months;

d) **Maximum canopy harvesting frequency –** Require that no one area (i.e. kelp bed) may be harvested more than twice in one year; and

e) **Maximum canopy harvest width -** Constrain harvesting of the canopy biomass to strips no greater than 5 metres in width.

122 If the harvest management measures outlined under Option 2 were supported in full, or in part, then MFish proposed implementation occur under one of the following ways:

Option A: Implement the harvest management measures by way of the Chief Executive using his powers under s 190 of the Act, as well as the issuance of a *Gazette* Notice under s 11 of the Act.

Option B: Implement the harvest management measures using voluntary industry mechanisms, such as a Memorandum of Understanding (MOU) or agreed-to Code of Practice (COP) agreed among all potential quota holders.

Option C: Implement the harvest management measures using a combination of regulation and voluntary industry mechanisms.

Consultation

123 MFish released the IPP for six weeks of public consultation on 11 June 2010. The IPP was published on the MFish external website and sent to persons and organisations with an interest in review of fisheries' sustainability measures, and

[33] Ibid no. 26.

those having an interest in bladder kelp specifically; including tangata whenua, and environmental, recreational and commercial sector stakeholders.

Submissions Received

124 MFish received nineteen submissions from:

- Mark Armstrong (Armstrong)
- Chatham Islands Enterprise Trust (CIET)
- Department of Conservation (DOC)
- East Otago Taiapure Management Committee (EOTMC)
- Environment Canterbury Regional Council (ECRC)
- Graham Harris (Harris)
- Hokotehi Moriori Trust (HMT)
- Kāti Huirapa Rūnaka I Puketeraki (Puketeraki)
- Graham Metzger (Metzger)
- New Zealand Seafood Industry Council Ltd. (SeaFIC)
- Ngati Mutunga O Wharekauri Asset Holding Co. Ltd. (Ngati Mutunga)
- option4
- Pā Tangaroa – Customary Fisheries Forum (Pā Tangaroa)
- Katja Schweikert (Schweikert)
- Seaweed Association of New Zealand (SANZ)
- Sea-Right Investments Ltd. (Sea-Right)
- Southern Pacific Minerals Ltd. (SPML)
- Te Ohu Kaimoana Trustee Ltd. (Te Ohu)
- Robert Win (Win)

Summary of Submissions

125 Seven of the nineteen submissions support Option 2:

a) Te Ohu supports implementation via Option B (voluntary mechanisms). Te Ohu considers there is no point in locking in management specifications before industry has had time to test and develop what has been applied in other countries. They consider the most adaptive management approach would fall under a voluntary mechanism.

b) Six submissions [Armstrong, DOC, option4, SANZ, Sea-Right, and SPML] support implementation via Option C (a combination of voluntary and regulatory mechanisms). Only Sea-Right specifies which measure (i.e. maximum cutting depth) should be implemented via regulation, however SPML also indicate their support for a maximum cutting depth. option4 (on behalf of itself, Hokianga accord, the mid-north iwi fisheries forum, and NZ Sport Fishing) support the proposed measures but reiterate their concern regarding any extensive commercial harvesting considering bladder kelp's high ecological, social and cultural values.

126 SeaFIC considers that commercial interests have clearly indicated their intention to develop the fishery in a manner that is consistent with the harvest management measures proposed. SeaFIC considers the implementation of these measures by regulation should be a tool of last resort, particularly in developmental fisheries with very few quota owners. They consider a voluntary approach enables a more adaptive response as opposed to regulatory control. SeaFIC supports development of an agreement (e.g. MOU) with MFish once quota has been allocated, and considers there to be adequate time for full development of such agreements before

harvest is initiated. SeaFIC notes that if MFish considers progress on such an agreement among quota-holders to be unsatisfactory MFish has the option to then impose regulations under s 11 of the Act.

127 Pā Tangaroa supports in principle the harvest management measures proposed, but has additional concerns they consider should be formally addressed prior to the stocks entering the QMS. Pā Tangaroa considers research specific to the Chatham Islands should be undertaken before a TAC is set and any harvest management measures implemented under a 'developmental phase' (re: growth rates, effects of harvest, sustainable harvest methods). They also consider a comprehensive management plan should be implemented prior to introduction and a monitoring programme that would be linked to phased increases in TACCs when certain criteria have been reached.

128 Ngati Mutunga, with support from CIET, does not support implementation of any harvest management measures under the TACs originally proposed for KBB4G (Table 1, Options 3 and 4). They refer to the MOU originally submitted by Te Ohu during consultation on TACs that outlines a proposed harvest strategy under their preferred TAC option of 1000 t for KBB4G.

129 Four submissions [EOTMC, Puketeraki, Schweikert, and Win] oppose all of the options presented. EOTMC, with support from Puketeraki, do not believe any of the options provide for the protection or even sustainable harvest of bladder kelp forests. Schweikert does not consider the research by Pirker[34] should be extrapolated to serve a nation-wide harvest because of the differences in bladder kelp productivity in wave-sheltered versus exposed marine environments. Win disagrees with MFish's consideration of the proposed management measures as they are taken from research that was supported by a stakeholder with commercial interests in bladder kelp.

130 Four submissions [ECRC, Harris, HMT, and Metzger] do not indicate support for any of the options proposed. ECRC opposes Option 1, but considers more thought is necessary to properly assess the proposed measures under Option 2 and the potential effects on coastal processes (e.g. erosion).

Assessment of Harvest Management Measures

Option 1 – Status quo

131 Maintaining the status quo would result in no additional harvest management measures for the bladder kelp fisheries being implemented prior to setting of the TAC for the 2010/2011 fishing year. Under this option, the TAC becomes the sole management tool for ensuring sustainability of each stock, and management of potential adverse effects from harvesting on localised kelp beds, and associated and/or dependent species.

132 The majority of submissions do not support introducing KBB3G and KBB4G to the QMS without some additional harvest management measures in place prior to mitigate potential adverse effects from harvesting. A number of submissions consider that even a low level TAC without additional harvest management measures in place could have adverse impacts and/or prevent maximising utilisation benefits.

133 In the absence of controls to restrict harvest in finer spatial scales within a QMA, there is a risk that a large TAC could result in localised depletion of beds within a QMA (and potential localised ecosystem impacts) given the importance of kelp to

[34] Ibid no. 9.

near shore ecosystems. Localised depletion could result in adverse environmental impacts if depletion of beds occurs in area where they form a habitat of significance for fishery management and/or leads to impacts on associated species. MFish notes that serial localised depletion of kelp beds could lead to increased QMA-level sustainability risks.

134 The risks of localised adverse effects on kelp beds and associate and/or dependent species arising from poor harvesting practices or lack of harvest management measures is partially dependent on the level of TAC chosen for each stock. Risks of localised adverse effects are greatest if TACs are set at the higher levels without additional harvest management measures in place.

135 Maintaining the status quo will provide the greatest amount of flexibility for commercial harvesters to develop their own harvesting strategies and undertake sustainable commercial harvest as they see fit to maximise utilisation benefits and value. MFish considers the level of risk of harvesters not following best practice to be low in the short-term, but largely dependent on the number of harvesters that enter the fishery following QMS introduction and the level of utilisation provided. Poor harvesting practices can result in reduced yield from the kelp beds, poor regrowth, and negative impacts on other economically important commercial species (e.g. paua, kina).

136 MFish considers the status quo impedes the management goals for the bladder kelp fishery and sees benefit in implementing some additional harvest management measures to mitigate associated risks of harvesting. Using TAC setting as the primary tool for ensuring the functioning and sustainability of attached bladder kelp does not mitigate potential risks, and may constrain utilisation opportunities, thereby reducing potential economic, social and cultural benefits from the fishery.

Option 2 – Adoption of Harvest Management Measures

137 Under Option 2 the IPP outlined a range of potential harvest management measures to manage risk associated with harvesting. There were mixed views in submissions regarding the potential effectiveness of each proposed measure. MFish also acknowledged in the IPP that there were substantial practical issues relating to the implementation, monitoring and enforcement of each of these measures, making some of them untenable at this time. After consideration of points raised in submissions, MFish proposes that Maximum cutting depth and Finer spatial scale reporting should be implemented from 1 October 2010.

138 Other options considered (including Maximum canopy removal, Maximum canopy harvest frequency, and Maximum canopy harvest width) are problematic to implement given current information and require further assessment in the developmental phase of the fishery to be effective in the New Zealand context. These measures are better implemented through voluntary mechanisms that enable a more adaptive management response to changes in bladder kelp bed biomass, productivity, growth and its vulnerability to other environmental stressors, and should be considered by industry post-QMS introduction.

Maximum cutting depth

139 The IPP outlined a proposal to impose a maximum cutting depth of 1.2 m. This measure would protect the base of the plant (where the reproductive structures are located) and prevent whole removal of plants, enabling continuous growth of juvenile fronds found below the cutting depth and protecting against invasions of other seaweed species to the same habitat. Restricting commercial harvest of bladder kelp to the canopy would also reduce the potential establishment and proliferation of

Undaria in localised areas where harvest of bladder kelp occurs. Constraining harvest to the canopy would safeguard harvesters' utilisation opportunities of the attached bladder kelps as this will enable regrowth and protect reproductive capacity to maximise recovery of the beds post-harvest.

140 The majority of submitters considered restricting harvest to the canopy a key management principle that should be formally adopted by all harvesters to ensure sustainable utilisation. Other submissions noted concerns about the 1.2 m measurement and whether that measurement falls from the sea surface or the base of the plant. These submitters consider that in areas where bladder kelp beds are located in shallow water, or experience extreme tidal effects (e.g. 2 m), the entire plant could be removed. Additionally, bladder kelp beds that are subject to turbid waters may experience slower post-harvest recovery from reduced light penetration to the base hindering growth. Schweikert considers that cutting the canopy would result in less energy being directed to reproduction because energy would instead be diverted to re-growth of the fronds below the cutting depth.

141 Regulated cutting depths are used by the two largest and longest-running bladder kelp fisheries (in California and Mexico). MFish acknowledges there may be situations or areas where this measure is less effective, particularly if the majority of a plant is exposed to harvest at low tide or spring low tide, or where turbid waters slow post-harvest recovery. However, MFish considers this measure would be effective in reducing the overall impact of harvesting on most bladder kelp beds. MFish considers harvesting is most likely to occur where the beds are deep enough for this measure to be effective. MFish also considers there is sufficient industry incentive to encourage rapid post-harvest recovery to ensure maximum canopy development over a shorter timeframe. MFish would review this measure if new information suggested changes were necessary to preserve plant structure and productivity. MFish considers this measure is critical to support any sustainable harvest strategy.

Implementation

142 MFish proposes to regulate harvest to no more than 1.2 m below sea surface similar to the regulation used in the California fishery. Under this more generic approach, MFish would work with industry to ensure they are aware of their requirements and how these operations are to be carried out in relation to those requirements.

143 An alternative approach would be more prescriptive and could constrain how kelp is harvested by hand-gathering and mechanical methods. For example, constraint harvest by hand-gathering to the cutting of plants from the sea-surface only. If harvesters choose to use mechanical equipment, regulation could require that no cutting tool penetrate the sea-surface more than 1.2 m. Monitoring would focus on examining gear to determine whether it is likely to cut at that depth and where possible the accuracy of self-reporting. MFish notes that monitoring beyond this will be limited.

144 MFish considers that during initial implementation we can consider the necessary flexibility required by harvesters to develop effective and compliant harvesting methods. The more flexible approach to the regulation relies on a significant amount of voluntary compliance. MFish considers there is likely to be high levels of voluntary compliance given the level of support for the measure in submissions and the likely limited number of quota holders following QMS introduction. Some submissions noted that this approach is current industry practice. However, it should be noted that this approach will be complicated in terms of allowing us to manage our evidential requirements should enforcement action be necessary.

Finer spatial scale reporting

145 The IPP outlined a proposal to require the latitude and longitude location of each harvested kelp bed to be reported. This information would help identify spatial variation in abundance and distribution across QMAs and enable monitoring of the distribution of harvesting effort. This information is important when assessing biological productivity, growth, mortality and potential interactions with associated and/or dependent marine species. Fine spatial scale reporting is also useful in the development of stock assessments, particularly where spatial structure of a stock is quite patchy and there is significant heterogeneity in productivity.

146 The development of models and assessments that are accurate and more robust enables greater confidence in the assessment of kelp stocks, particularly when considering the significant temporal and spatial population dynamics that occur. Fine scale reporting provides industry with useful information to assess potential yield across spatial various scales and develop harvesting strategies, which may include rotational harvesting programmes to maximise benefits in areas where the beds are most productive.

147 SANZ and option4 consider a definition of what is a 'kelp bed' would support this proposed measure. SANZ notes that beds are both spatially and temporally variable, but consider it a valuable exercise to define what constitutes a bed to support finer spatial scale reporting. SANZ and option4 propose that the mapping of bladder kelp beds within KBB3G and KBB4G be required as a part of harvesting and catch reporting, where individual permit holders map out the spatial extent of each bed and where they intend to harvest from. Spatial mapping information could be used to determine recovery of harvested beds and would support the proposed harvest management measure regarding finer spatial scale reporting. EOTMC consider that better reporting would not prevent extensive harvesting in bladder kelp beds of outstanding value.

148 MFish proposes to work with industry on formulating such a definition of a kelp bed once quota has been allocated. MFish considers that it is premature to implement a spatial mapping requirement until industry has the opportunity to consider the most robust approach, a standardised process, and associated costs.

149 In the interim, MFish considers implementation of a finer spatial scale reporting framework critical to identifying localised areas where harvest is being concentrated and how much kelp was being removed. Fine spatial scale reporting is useful in the development of a number of management strategies, both industry and government led, and enables MFish to assess different management strategies to ensure that kelp stocks are sustained at levels that provide for current and future use to maximise benefits.

Implementation Framework

150 The harvest management measures outlined under Option 2 could be mandatory (Option A), voluntary industry mechanisms (Option B), or a combination of regulatory and voluntary industry mechanisms (Option C).

151 The majority of submissions that commented specifically on implementation supported Option C, a combination of regulatory and voluntary industry mechanisms. However, only one submission cited what measure(s) should be implemented via regulation (i.e. Maximum cutting depth).

152 Te Ohu considers any harvest management measures should be implemented under

a voluntary mechanism (Option B). SeaFIC considers the potential ecosystem effects of bladder kelp harvest to be over-emphasised, particularly given additional harvesting controls that could be implemented. However, both SeaFIC and Te Ohu consider additional management controls should be developed after allocation of quota and under a voluntary mechanism that allows for a more adaptive risk management approach. SeaFIC notes that MFish has the option to impose regulations at a later date if industry's approach is considered unsatisfactory.

153 In general MFish has a preference for implementation of harvest strategies via voluntary agreement, where this agreement can provide sufficient surety that the measure(s) will be applied consistently and on an ongoing basis. In some cases the complexity of the measures themselves lends them to application by industry arrangement rather than Government regulation (because they would be too costly to ensure compliance if there was not widespread voluntary agreement to apply the measures).

154 While MFish considers all of the measures discussed above would reduce the risk of adverse effects from harvesting attached bladder kelp, a number of the measures fit better under a voluntary industry-driven strategy (i.e. *Maximum canopy removal, Maximum canopy harvest frequency,* and *Maximum canopy harvest width*). These measures cannot be effectively enforced at this time because there is insufficient information available regarding location and size of bladder kelp beds. MFish also acknowledges the difficulty in developing such an arrangement before quota-holders have been identified (some of the quota for attached bladder kelp in KBB3G will be made available to the highest bidder). The question is whether there is benefit in regulating some measures in advance of any industry agreement.

155 On balance, given the potential constraint to utilisation necessary to manage the risk of adverse effect without additional management controls MFish considers there is benefit in implementing those measures that will be most effective in reducing the risk of adverse effects from harvesting and will impose least cost on industry.

156 Based on the analysis above MFish recommends that you implement a *Maximum cutting depth* via *Gazette* notice under s 11(4) of the Act. To do so, you must take into account the matters outlined in ss 11(1) and 11(2) of the Act, which are discussed in the previous chapter under *Sustainability Measures – Considerations* (beginning paragraph 49).

157 Sea-Right (the current principle harvester) indicated their support for the regulation of a maximum cutting depth of 1.2 m. SPML concur with implementation of a cutting depth of 1.2 m maximum but did not specify whether this should occur under MFish regulation. However, SPML did note their intention to harvest with a sickle blade mower set a 1.2 m to ensure compliance.

158 MFish also seeks your views on the Chief Executive using his powers under s 190 of the Act to require *Finer spatial scale reporting*. MFish considers regulation of this measure necessary to provide baseline information regarding harvesting effort and biomass removal across various spatial and temporal scales because of the discrete nature of bladder kelp beds.

Implementation of other measures

159 MFish proposes to work with quota-holders following introduction into the QMS to develop of a voluntary MOU between MFish and industry as a mechanism to implement further measures to reduce the risks associated with the potential adverse effects of harvesting.

160 A number of submissions consider that likely quota-holders in KBB4G would cooperate to implement a suitable harvest strategy. They contend most of these groups had interests in other fisheries (e.g. rock lobster, paua) that would provide sufficient incentive for a cautious and robust development of the industry. MFish acknowledges that Te Ohu has provided a MOU agreed to by Hokotehi Moriori Trust, Ngati Mutunga o Wharekauri Iwi Trust, and Chatham Island Enterprise Trust that outlined an agreed to set of harvesting protocols to mitigate potential adverse effects of harvesting. The MOU includes the harvest management measures proposed under Option 2. Te Ohu notes that the MOU is formally endorsed by all but one of the potential future quota owners in KBB4G, but that individual has separately endorsed the majority of the recommendations outlined in the MOU. MFish considers this MOU provides a good basis for development of a formal harvesting strategy.

161 MFish also acknowledges additional support from SANZ, SeaFIC, and Sea-Right, to develop an MOU or similar among quota-holders within each stock (once allocated) through the formal establishment of an industry association. MFish notes these submissions indicate a strong willingness of industry to develop a harvest strategy that maximises value from the resource within environmental limits.

Other Management Measures Proposed

162 Protection of some kelp beds*:* A number of submissions consider that some bladder kelp beds should be protected from any harvest due to outstanding ecological and/or cultural significance. Proposed areas included kelp beds north of Otago, those found in the East Otago Taiapure, Cape Campbell, and any within proposed Mataitai in the Ngāi Tahu takiwä be established as closed areas. Te Ohu support Ngāi Tahu request that no commercial harvesting of kelp beds occurs within important mahinga kai areas. Some stakeholders expressed concern over your ability to close the fishery or an area to harvest if it is deemed to be unsustainable.

163 Te Ohu supports the kelp industry working with stakeholders and tangata whenua to identify sensitive areas where commercial kelp harvesting may be inappropriate. Te Ohu (and under the recommendations in the MOU) recommend the use of pilot areas where limited harvest can occur until there is robust evidence that shows harvest is sustainable and not effecting associated stocks. SANZ and option4 both recommend that the use of control beds (where no harvest would occur) would assist with monitoring potential effects of harvest in localised areas.

164 MFish considers the use of control beds could be a useful tool for both monitoring and protection of some beds. Until more is known about the distribution of bladder kelp MFish considers it is premature to regulate closed areas. MFish will work with industry and other stakeholders to identify areas of outstanding ecological and/or cultural significance where harvest may be avoided either through voluntary or regulatory means.

165 Implementation of smaller management areas: MFish agrees with several submissions that attached bladder kelp stocks should be managed on a small spatial scale due to its vulnerability to localised over-harvesting, and its highly variable abundances and spatial productivity. MFish considers that at this time QMAs provide sufficient boundaries within which quota owners and stakeholders can practice small-scale management. MFish will monitor this approach and determine whether smaller stock management over time is best implemented using fisheries plans, alteration of QMAs and other measures within the Act.

166 Implementation of a rotational harvest strategy: MFish considers these stocks well

suited to being managed rotationally, and this strategy can help reduce disruption to the understorey of the beds, prevent localised depletion issues and maximise utilisation opportunities. However, rotationally managed stocks generally require annual biomass estimates that would determine the maximum canopy biomass that could be harvested (similar to a CAY), to respond to annual fluctuations across various spatial scales. This management strategy involves annual biomass surveys and yield calculations that can be costly. MFish considers it premature to implement such a strategy prior to KBB3G and KBB4G entering the QMS and allocation of quota, but will work with stakeholders if they wish to proceed in this direction.

167 Implementation of seasonal controls: Growth rates of bladder kelp beds in New Zealand are strongly seasonal and vary along the coast. The time of year harvesting occurs will have a strong influence on post-harvest recovery and needs to be considered. There is currently insufficient information to accurately describe growth rates in all areas; however there is information available for some locations (e.g. Otago Harbour, Akaroa Harbour) that will be useful in the development of harvest protocols. MFish will work with industry to identify this information and provide support in the development of harvest strategies that maximise bed recovery between harvests.

168 Industry council and area based management companies: The implementation of an industry council or local area-based management companies is supported by MFish. A number of submissions have indicated their support for the formation of an industry structure to manage the fishery on finer spatial scales. Additionally, SANZ and option4 have indicated their support for implementation of a “one area/one harvester” approach to seaweed harvesting. MFish notes that this type of framework is not possible under the Act but support industry investigation of whether it is a viable approach appropriate to maximise value for all quota-holders while mitigating adverse effects of harvesting.

Conclusion and Summary of Recommendations

Conclusions

169 MFish recommends you consider the potential utilisation benefits associated with implementing a higher TAC versus the potential increase in adverse effects from harvesting (Table 4). MFish recommends that you consider additional harvest management measures to mitigate these risks. Alternatively, you may implement a lower TAC, which would reduce potential adverse effects from harvesting but constrain utilisation until quota-holders were identified and given the opportunity to develop a formal harvesting strategy post-QMS introduction.

Table 4: Level of risk associated with potential adverse effects of harvesting on localised areas and associated and/or dependent species in the absence or presence additional harvest management levels at each TAC option proposed

Stock		TAC (tonnes)	Level of risk associated with adverse effects of harvesting	Required harvest management tools to mitigate risk	Level of risk with additional harvest management measures
KBB3G	**Option 1**	1866	Highest	Regulate maximum cutting depth and require finer scale reporting; support additional voluntary mechanisms	Moderate-High
	Option 2	1238	High		Moderate
	Option 3	377	Moderate		Low
	Option 4	41.2	Low	Rely solely on voluntary mechanisms	Low
	Option 5	18.2	Low		Low
KBB4G	**Option 1**	411	Highest	Regulate maximum cutting depth and require finer scale reporting; support additional voluntary mechanisms	Moderate
	Option 2	274	Moderate		Low
	Option 3	26.2	Low	Rely solely on voluntary mechanisms	Low
	Option 4	2.2	Low		Low

170 Based on best available information MFish recommends that you:

a) set the TAC and sector allowances for KBB3G as laid out in Option 2 (Table 1);

b) set the TAC and sector allowances for KBB4G as laid out in Option 2 (Table 1);

c) set the annual and interim deemed value rates at $1.00 per kg and $0.50 per kg, respectively for both stocks;

d) implement a Maximum cutting depth of 1.2 m via Gazette notice under s 11(4) of the Act, and;

e) note that the Chief Executive would also exercise his powers under s 190 of the Act to require Finer spatial scale reporting.

171 This is because:

a) Bladder kelp forests are amongst the most productive marine communities in New Zealand and play a significant ecological role within the marine ecosystem.

b) Bladder kelp beds are sensitive to changes in environmental factors and naturally experience large fluctuations in abundance both spatially and temporally.

c) Current estimates of total biomass or sustainable yield are unavailable for the entire KBB3G or KBB4G areas and stock status and potential yield were determined using historical information.

d) Although stock status is historical both KBB3G and KBB4G are considered to be

near virgin biomass levels and are likely to sustain significantly higher catch levels than present.

e) Current commercial catch levels are low and reflect the restrictive commercial access arrangements to attached bladder kelp under the previous management regime. Higher commercial catches are anticipated under QMS management in the long-term.

f) Attached bladder kelp is generally not harvested by non-commercial fishers.

g) There is strong support to proceed with a cautious proving up of the fishery levels until robust stock assessment information becomes available and appropriate harvesting strategies can be developed.

Recommendations

KBB3G

172 MFish recommends that, for the KBB3G fishery, for the fishing year commencing on 1 October 2010, you:

EITHER

a) **Agree** to set a TAC of 1866 t and within this:

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 1864.8 t.

OR

b) **Agree** to set a TAC of 1238 t (MFish preferred option) and within this:

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 1236.8 t.

OR

c) **Agree** to set a TAC of 377 t and within this:

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 tonne, and;

iv) **Set** a TACC of 375.8 t.

OR

d) **Agree** to set a TAC of 41.2 t and within this:

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 40 t.

OR

e) **Agree** to set a TAC of 18.2 t and within this set:

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 17 t.

KBB4G

173 MFish recommends that, for the KBB4G fishery, for the fishing year commencing on 1 October 2010, you:

EITHER

a) **Agree** to set a TAC of 411 t and within this:

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 409.8 t.

OR

b) **Agree** to set a TAC of 274 t (*MFish preferred option*) and within this:

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 272.8 t.

OR

c) **Agree** to set a TAC of 26.2 t and within this:

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t,

and,

iv) **Set** a TACC of 25 t.

OR

d) **Agree** to set a TAC of 2.2 t and within this:

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 1 t.

KBB3G and KBB4G

174 MFish recommends that, for the KBB3G and KBB4G fisheries, for the fishing year commencing on 1 October 2010, you:

EITHER

i) **Agree** to set an annual deemed value of $1.00 per kg (excluding GST) for both KBB3G and KBB4G (*MFish preferred option*), and;

ii) **Agree** to set an interim deemed value of $0.50 per kg (excluding GST) for both KBB3G and KBB4G (*MFish preferred option*);

OR

iii) **Agree** to set an annual deemed value of $4.00 per kg (excluding GST), and

iv) **Agree** to set an interim deemed value of $2.00 per kg (excluding GST);

AND

v) **Agree** that standard differential deemed value rates are used in KBB3G and KBB4G but no overfishing thresholds be set at this time;

AND

vi) **Agree** to implement a maximum cutting depth of 1.2 m;

AND

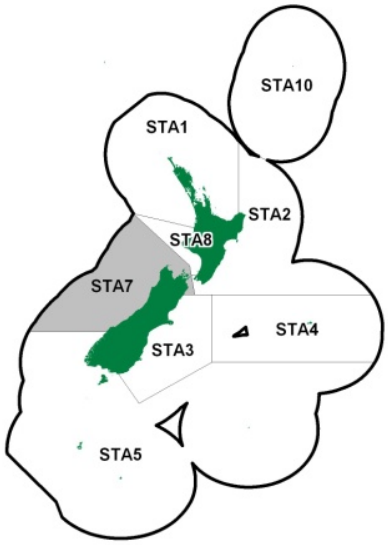
vii) **Note** that the Chief Executive will require finer spatial scale reporting;

AND

viii) **Support** development of a Memorandum of Understanding, or similar, between MFish and industry quota-holders to develop a voluntary harvesting strategy.

STARGAZER 7 (STA 7)

Figure 1: Quota Management Areas (QMA) for STA



Executive Summary

1 The Ministry of Fisheries (MFish) recommends you choose to increase the TAC from 1000 t to either 1072 t (Option 2) or 1128 t (Option 3) for the start of the 2010/11 fishing year.

2 The results of the 2009 West Coast South Island trawl survey, when considered alongside the 2007 stock assessment, indicate that the STA 7 stock size is likely to be near or above the target reference biomass, BMSY.

3 Current biomass appears to be stable or increasing under current catches, however information on long term sustainable yield is uncertain. The two recommended options are both relatively low sustainability risk, but Option 3 poses a relatively greater risk. Your preferred option will depend on the level of risk you consider acceptable.

4 MFish also recommends that you retain existing Maori customary and recreational allowances, set an allowance for other sources of fishing-related mortality of 27 t, and increase the Total Allowable Commercial Catch (TACC) to 1042 t.

5 MFish recommends the current annual deemed value rate be retained, but that the interim deemed value rate be increased from 50% to 90% of the annual deemed value rate for STA 7 to encourage fishers to balance their catch with Annual Catch Entitlement (ACE) more regularly.

Background

6 STA 7 entered the Quota Management System in 1986. In the 1991/92 fishing year the TAC (which applied only to commercial catch) for STA 7 was increased from 528 t to 700 t under the adaptive management programme (AMP). The AMP provided for increases to the TAC of low-knowledge fishstocks in conjunction with a monitoring programme to track the response of the fishstock to the catch limit change.

7 The enactment of the Fisheries Act 1996 established the TAC as the overall constraint on fishing, and the TACC as the commercial catch limit. STA 7 was reviewed for the 2002/03 fishing year and retained in the AMP. At this time a TAC was set at 1000 t, and this was allocated as a Maori customary allowance of 1 t, a recreational allowance of 2 t and a TACC of 997 t. No allowance was set for other sources of fishing-related mortality.

8 STA 7 was put forward for a TAC review for the 2010/11 fishing year at the request of Challenger Finfisheries Management Company Limited (Challenger Finfish), with a view that, in accordance with new information, the TAC should be raised to accommodate a TACC increase and the establishment of an allowance for other sources of fishing-related mortality.

9 You are being asked to vary the TAC for this stock under section 13 of the Fisheries Act 1996 (the Act) and to vary the TACC under section 21 of the Act. To assist you to make decisions this paper sets out:

- Background on biological characteristics of the stock, a description of the fishery and best available information on stock status;
- Analysis to inform your decision on varying the TAC, including points raised in submissions;
- Analysis of matters to inform your decision on allocating the TAC, including points raised in submissions.

10 This paper also contains proposals to amend the deemed value regime for this stock.

Consultation

11 MFish released an IPP for public consultation on 21 June 2010, with submissions closing on 26 July 2010. The IPP was published on the consultation section of the MFish website and posted and emailed to persons and organisations with an interest in STA 7.

Submissions received

12 MFish received a total of five written submissions in response to the STA 7 IPP. These submissions were from:

- Aotearoa Fisheries Limited (AFL)
- Challenger Finfisheries Management Company Limited (Challenger Finfish)
- New Zealand Recreational Fishing Council (NZRFC)
- Seafood Industry Council (SeaFIC)
- Te Ohu Kaimoana Trustee Limited (Te Ohu).

13 No submissions support MFish's initial position that Option 2 (a TAC of 1072 t) provides the most appropriate catch limits at this time.

14 NZRFC support Option 1 (a TAC of 1025 t).

15 AFL and Te Ohu support Option 3 (a TAC of 1128 t).

16 Challenger Finfish support Option 3 as a minimum increase, but propose that a greater increase would be more appropriate.

17 SeaFIC does not support any of the options proposed in the IPP and recommends that a greater increase be considered.

18 AFL support MFish's initial position that deemed value rates should be increased. NZRFC support deemed value rates higher than those proposed in the IPP. Challenger Finfish, SeaFIC and Te Ohu all oppose the proposed increases and advocate for decreases to the current deemed value rates.

Biological Characteristics of Giant Stargazer

19 Two species of giant stargazer are present in New Zealand waters, the giant stargazer (*Kathetostoma giganteum*) and the banded giant stargazer (*Kathetostoma sp.).* STA 7 includes both species. Banded giant stargazer is thought to be relatively uncommon and almost all catch in STA 7 is likely to be giant stargazer.

20 Giant stargazer is widely distributed around New Zealand. It is generally found on muddy and sandy substrates to depths of 500m, but is most common between 50 and 300 m on the continental shelf around the South Island.

21 Age and growth studies indicate giant stargazers reach sexual maturity at a total length of about 40 - 55cm depending on sex, at an age of 5-7 years. Giant stargazers are known to reach a total length of approximately 90cm and can reach a maximum age of at least 25 years. Giant stargazers are relatively long-lived and moderately productive. The stock is normally stable year to year, and can be vulnerable to over-fishing.

STA 7 Fishery

22 STA 7 is predominantly a commercial fishery, no information regarding customary Maori or recreational catch is currently available.

23 Catch and effort data reported by commercial fishers indicates that approximately 97% of STA 7 is caught by bottom-trawl, and 80% of these trawl landings come from statistical areas 33 and 34 (refer Figure 2).

24 Over half of trawl-caught STA 7 is taken as bycatch in the inshore bottom-trawl fisheries targeting tarakihi, barracouta or flatfish. Some is taken as bycatch in the deeper water hoki and ling fisheries, and a small amount is targeted STA 7 catch.

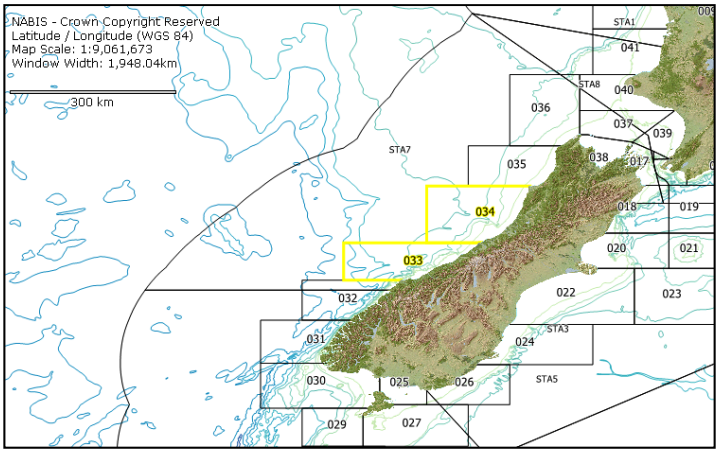


Figure 2: Map showing inshore statistical areas within the STA 7 QMA

25 Landings of STA 7 reached a high of 1440 t in the 2000/01 fishing year. In the 2001/02 fishing year landings dropped down to 802 t. When reviewing the performance of the AMP in 2007, the MFish AMP Fisheries Assessment Working Group (AMP FAWG) attributed this drop to changes in the management regime, including the discontinuation of the bycatch trading scheme and increased deemed value rates. The AMP FAWG noted that this demonstrated an ability to actively target or avoid stargazer. Since the 2002/03 TACC increase, landings have been close to the TACC; average landed catch from 2002/03 to 2008/09 has been approximately 1000 t per fishing year.

26 STA 7 commercial landings and TACC are shown in Figure 3.

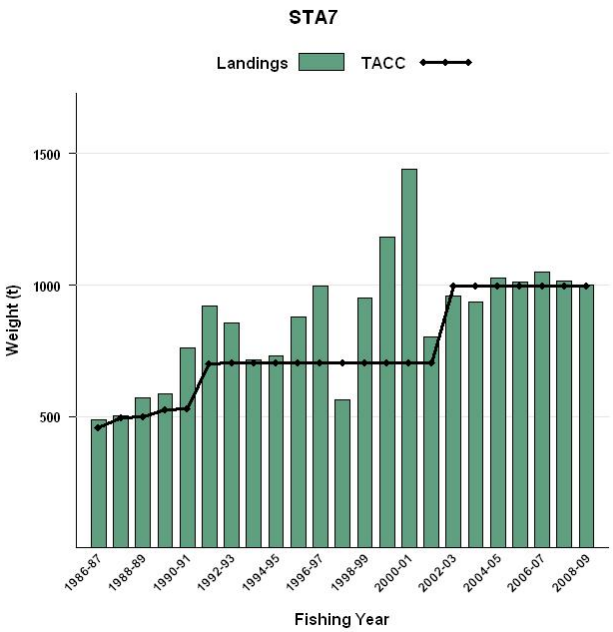


Figure 3: STA 7 reported commercial landings and TACC between 1986/87 and 2008/09

STA 7 Stock Status

27 Target reference biomass, B_{MSY}, for STA 7 is assumed to be 40% of the virgin biomass (B_0). Under the MFish Harvest Strategy Standard Guidelines, 40%B_0 is the recommended target reference point for stocks with average levels of productivity in the absence of any other information.

28 A stock assessment of STA 7 was completed in 2008 and accepted by the MFish Southern Inshore Fisheries Assessment Working Group (Southern Inshore FAWG). Stock biomass was estimated at 24.1 - 55% B_0 with a median of 38.8% B_0 for the base case model, and ranged between 24.2 and 87.4% B_0 for the two model sensitivities. The stock assessment showed that, provided the assumptions about recruitment hold, STA 7 is likely to be near B_{MSY}.

29 Relative biomass indices are also available for STA 7 from a series of bottom-trawl research surveys of the West Coast South Island that began in 1992. These surveys are undertaken every two to three years with the most recent survey completed in 2009.

30 The 2009 point estimate is 1952 t, the highest in the series (refer Figure 4). However, the 2009 point estimate is the most uncertain for the survey series, with error bounds that overlap with the error bounds of both the 2005 and 2007 point estimates.

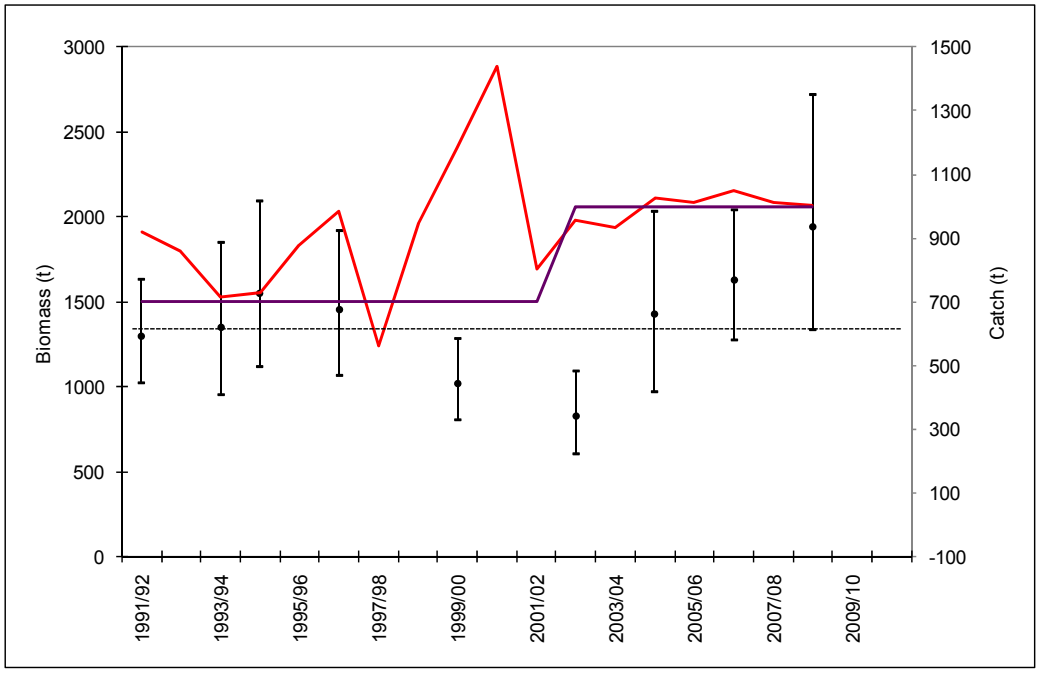


Figure 4: Stargazer biomass estimates and CVs from the West Coast South Island trawl survey series, mean biomass for the survey (dotted line), catch (red line) and TACC (purple line) from 1991 to 2010

31 When considered together, the 2007 stock assessment estimate and trawl biomass indices indicate that the STA 7 stock size is likely to be near or above B_{MSY}.

32 Challenger Finfish submit that MFish places too much emphasis on the uncertainty of this estimate. They submit that there "has been a material upward trend in the survey biomass for the past three surveys". SeaFIC also considers that the results from the survey series "provide clear evidence of an increase in abundance from 2002/03 to 2008/09 and that "the recent trend is clear and indicates that relative abundance in 2008/09 is double that in 2002/03".

33 MFish acknowledges that the results indicate an increase in abundance between the 2002 and 2009 surveys. MFish considers the level of uncertainty to be important, particularly when interpreting trends from the survey series. Given the levels of uncertainty, particularly in the 2009 point estimate, MFish does not agree that relative abundance in 2008/09 can confidently said to be double that in 2002/03. Further, given the uncertainty in the last three point estimates, MFish rejects the claims that these three surveys prove an upward trend between these years. The survey series (refer Figure 4) indicates that abundance is at least relatively stable and may be increasing under current catch levels.

Management Options

34 MFish proposes options for changes to sustainability measures for STA 7 as outlined in Table 1 below.

Table 1: Current and proposed TAC and associated sector allowances for STA 7

Stock	Option	TAC	Maori customary allowance	Recreational allowance	Other sources of mortality	TACC
STA7	Current	1000 t	1 t	2 t		997 t
	1	1025 t	1 t	2 t	25 t	997 t
	2	1072 t	1 t	2 t	27 t	1042 t
	3	1128 t	1 t	2 t	28 t	1097 t

Total Allowable Catch

35 The current status of STA 7 in relation to the level of the stock that can produce the maximum sustainable yield (B_{MSY}) is able to be reliably estimated using the best available information. The best available information shows that the stock status is likely to be near or above the level of stock that can produce the maximum sustainable yield (B_{MSY}). As such, under section 13 (2) (c) of the Fisheries Act you may set or vary the TAC so as to:

- enable the level of stock to move further above B_{MSY}; or
- maintain the level of stock at B_{MSY}; or
- enable the level of stock to be moved down towards B_{MSY}.

36 You must have regard to the interdependence of stocks in setting or varying the TAC.

37 In considering the way in which and rate at which a stock is moved towards or above B_{MSY}, you must have regard to such social, cultural, and economic factors as you consider relevant.

Analysis

38 For STA 7, best available information to inform TAC setting at this time is the STA 7 stock assessment, relative biomass indices from the West Coast bottom trawl survey, commercial catch information, recreational catch estimates, Maori customary permit reports and information on giant stargazer biology and behaviour. Information from submissions on the IPP also informs the analysis of options in this paper.

39 Available information suggests STA 7 stock size is likely to be near or above B_{MSY} and that stock size is stable or increasing at current catch levels. This indicates that a small increase in catch is likely to be sustainable and would provide for increased utilisation benefit in the short-medium term. However, there is limited information on the long term sustainable yield. Proposed management options have taken this uncertainty into account.

40 Trends in biomass can be monitored well by trawl surveys. The next trawl survey is due to be carried out in 2011. Information from this survey will be available for management purposes in 2013.

41 Relevant matters for you to take into account in setting or varying a TAC include:

- Any effects of fishing on any stock and the aquatic environment
- Any existing management controls under the Fisheries Act that apply to the stock or area concerned; and
- The natural variability of the stock.

42 You must also take into account the following environmental principles:

- Associated or dependent species should be maintained above a level that ensures their long-term viability
- Biological diversity of the aquatic environment should be maintained; and
- Habitat of particular significance for fisheries management should be protected.

43 STA 7 is comprised of two species, but almost all catch in STA 7 is likely to be giant stargazer. Stargazer are also likely to move between STA 7 and the neighbouring STA 5 and STA 8 management areas. It is not anticipated, however, that the proposed TAC (and TACC) options will change fishing operations in a way that will affect the interdependence of these stocks.

44 The social, cultural and economic implications of TAC setting vary depending on the option chosen. The implications for each option are set out in the next section.

45 The majority of STA 7 commercial take is bycatch in bottom-trawl fisheries. As the three proposed TAC options do not affect catch limits for the key species targeted when STA 7 is taken, or exceed historical recorded landings of STA 7, it is not anticipated that the proposed TAC (and TACC) options would result in a significant change to fishing operations. Therefore, it is not anticipated there will be an increase in impacts on the marine environment or on the harvest of other stocks.

46 If increased trawl effort did result, increased harvest of smooth skates, which are a bycatch of inshore trawl fisheries on the West Coast, may be a concern. The biomass index for smooth skates in the West Coast South Island trawl survey has declined substantially since 1997. There may also be concerns with the take of rough skates, but the available information is less conclusive. MFish has no information on the ease of avoiding or targeting smooth skate when trawling, but potential effects may be mitigated in part by the inclusion of both smooth skate and rough skate on Schedule 6 of the Fisheries Act 1996. Under Schedule 6, if likely to survive, they may be returned to the waters from which they were taken.

47 Standard management controls apply to the STA 7 fishery, for example a minimum net mesh size of 100 mm for both commercial and amateur fishers. The proposed changes to TACs do not affect these measures.

48 Giant stargazer stock size is not naturally highly variable from year to year. Giant stargazers are relatively long-lived and moderately productive. The stock is therefore vulnerable to over-fishing and caution should be taken when increasing catch limits.

49 Hector's dolphins aggregate at Westport and Hokitika, however there have been no known interactions between trawl fisheries and dolphins off the South Island West Coast and the options proposed are unlikely to result in significant change to the level of trawl effort.

50 Some habitats of particular significance to fisheries management have been identified in the Challenger fisheries management area (for example Farewell Spit). As noted above, the TAC proposals do not affect catch limits for the key species targeted when STA 7 is taken or exceed historical recorded landings of STA 7, therefore it is not anticipated that the proposed TAC (and TACC) options would result in a significant change to fishing operations.

51 The West Coast Marine Protection Forum has recently completed its proposal on the establishment of a marine protected area network for the South Island West Coast with the purpose of protecting marine biodiversity. MFish has not yet assessed these proposals but it is unlikely that the proposed TAC options will significantly impact on the areas likely to be proposed as part of this network.

52 You must also have regard to, or take into account, certain other matters set out below.

53 MFish is not aware of any provisions in any statement or plans under the Resource Management Act 1991 that are specifically relevant to setting a TAC for this stock.

54 MFish is not aware of anything in the provisions of management strategies or plans for relevant Conservancies that is relevant to these proposals.

55 STA 7 does not intersect with the Hauraki Gulf Marine Park. Therefore, there are no relevant considerations under the Hauraki Marine Park Act 2000.

56 MFish is not aware of any fisheries or conservation services, or any decisions not to require fisheries or conservation services, which are relevant to setting a TAC for this fish stock.

57 You must take into account any relevant Fisheries Plan for STA 7. At this time there is no relevant Fisheries Plan that has objectives that would impact on setting a TAC for STA 7.

58 In setting or varying sustainability measures, you must also act in a manner consistent with New Zealand's international obligations to fishing and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

59 A wide range of international obligations relate to fishing, including use and sustainability of fishstocks; and maintaining biodiversity (s 5(a)). MFish considers that the management options for STA 7 are consistent with these international obligations.

60 MFish also considers the proposed management options to be consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (s 5 (b)). Ongoing work is being done within the area covered by STA 7 to promote policies that help to recognise customary use and management practices.

Options

Option 1 – Increase TAC to match current levels of fishing-related mortality

61 Option 1 proposes to increase the TAC to take into account fishing-related mortality that is currently not accounted for in the TAC. The level of this mortality has been assumed at 2.5% of the current TACC. Accordingly, this option proposes to increase the TAC from 1000 t to 1025 t.

62 As the TAC increase in Option 1 will reflect existing harvest levels it is unlikely to have any effect on stock size, and should result in the level of the stock being maintained or moving further above B_{MSY}.

63 STA 7 is predominantly a fishery of commercial interest, and as such there is no information to indicate a benefit from management of the stock above B_{MSY}. However, Option 1 favours caution given the limited information on long term sustainable yield for STA 7. The option also avoids any potential increased impacts on the environment or other species such as smooth skate.

64 Option 1 is unlikely to result in unavoidable bycatches in excess of the TACC as fishery information and information provided by Challenger Finfish indicate giant stargazer can be avoided when trawling.

65 NZRFC support this option.

Option 2 – Increase the TAC from 1000 t to 1072 t

66 Option 2 proposes to increase the TAC based on an average of the last ten years reported commercial catch, and on an increased allowance for other sources of fishing-related mortality. MFish notes the average of the last ten years of reported commercial catch is influenced by two years of comparatively high catch at the start of the ten-year period.

67 Challenger Finfish state that basing the TAC on previous catch levels provides perverse incentives for fishers, and that the increase should be based on the abundance data. MFish notes that Option 2 is based on catch levels but is also consistent with other sources of information. Available abundance data is relative and does not provide a specific estimate for the level of increase that can be sustained.

68 Available information suggests that stock biomass may be increasing or at least relatively stable under current levels of catch and is likely to remain near or above B_{MSY}. A small increase in catch is likely to be sustainable and would provide for increased utilisation benefit in the short-medium term.

69 MFish notes that a West Coast trawl survey is being considered for 2011; subsequent trawl surveys will depend on available funding and priorities for research. Should these surveys go ahead they are likely to provide further information for monitoring changes to the fishery following the proposed TAC increase.

Option 3 – Increase the TAC from 1000 t to 1128 t

70 Option 3 proposes to increase the TAC by 10% in addition to an increase to account for other sources of fishing-related mortality. Option 3 favours additional opportunities for utilisation.

71 It is likely that STA 7 is currently near or above B_{MSY}. Option 3 is likely to maintain or move the stock towards B_{MSY}. However, there is uncertainty over long-term risks to the stock from this level of harvest .

72 Of the three options, Option 3 also has the greatest potential to impact on the environment or other species such as smooth skate. These risks could be mitigated by ongoing monitoring of the fishery.

73 SeaFIC state that describing the risks of each option relative to one another is misleading, and conceals the fact that all three options are at an absolute level of risk that is low.

74 Best available information does not provide for a calculation of absolute risk. In the absence of that information the risks that uncertainties pose are described primarily in relation to the amount of increase from existing catch limits. Option 3 is identified as having greater risks than the other options as this would increase the existing catch limits by the largest margin. However, it is noted that this option is still an appropriate option for you to consider. MFish note that abundance can be monitored well by trawl surveys. If information indicates a decline in abundance then catch limits can be adjusted in future.

75 Challenger Finfish and SeaFIC both suggest that additional or alternative options providing for a greater TAC increase should be included for your consideration. No new information has been provided and no specific TAC options are proposed. MFish considers the included options, given uncertainties regarding impacts on the environment, other species and the risk to long-term sustainable yield, provide for a range of reasonable increases with varying degrees of risk.

Allocation of the TAC

76 When setting any TAC, you must apportion that TAC between the relevant sectors and interests set out under the provisions of s 21 of the Act. Section 21 requires you to allow for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TAC.

77 The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on the best available information.

Maori Customary Non-Commercial Interests

78 All options propose to retain the Maori customary allowance of 1 tonne in this fishery. There is no new information to suggest that a review of this allowance is required.

79 Te Ohu states that they are “working with iwi to develop information and reporting systems that will provide a more accurate picture of the customary needs of iwi/ hapu”. At this time Te Ohu does not oppose a customary allowance of 1 t, however, Te Ohu would support an increase in the Maori customary allowance if iwi required an increase.

80 Section 21(4) requires that any mataitai reserve or closures/restrictions under s 186A to facilitate customary Maori fishing be taken into account. There are no mätaitai reserves or closures/ restrictions currently in place in the area covered by STA 7.

Recreational Interests

81 All options propose to retain the recreational allowance of 2 t in this fishery. There is no new information to suggest that a review of this allowance is required.

82 Te Ohu, though not opposed to the proposed recreational allowance, identified the need for a robust means to record recreational catch to better inform sustainability decisions.

Allowance for other sources of fishing-related mortality

83 An allowance for other sources of fishing-related mortality has not previously been included in the TAC for STA 7. MFish considers an allowance should be introduced regardless of the option chosen. In their request for a TAC review for STA 7, Challenger Finfish acknowledged the need for a fishing-related mortality allowance and suggested the allowance be calculated at the rate of 2.5 % of the TAC.

84 The robust physical nature of stargazer was provided as the rationale for this figure. The failure of a tag and release programme associated with the East Coast South Island trawl survey suggests that giant stargazer may not be as robust as assumed, however, MFish has no independent information on which to base an allowance and proposes that it be set at 2.5% of the TAC in the absence of any other information.

Total Allowable Commercial Catch (TACC)

85 STA 7 is largely a commercial fishery so it is proposed that increases in the TAC, aside from an allowance for other sources of fishing-related mortality, are allocated to the commercial sector.

86 Option 1 proposes to retain the status quo of 997 t.

87 Option 2 proposes to increase the TACC to 1042 t. This figure is equal to the average STA 7 catch landings over the past ten years and would result in a TACC increase of 45 t.

88 Option 3 proposes to increase the TACC to 1097 t. This figure represents a 10% increase in total landed catch for the STA 7 fishery and would result in a 100 tonne TACC increase.

89 Table 2 below estimates the potential additional revenue for the TACC proposed in each option, based on the current port price for STA 7 of $1.13 per kg.

Table 2: **Proposed TACCs (t) and corresponding change in annual economic return ($) for STA 7**

Option 1		Option 2		Option 3	
Proposed TACC	Potential Additional revenue	Proposed TACC	Potential Additional revenue	Proposed TACC	Potential Additional revenue
997	-	1042	$50,850	1097	$113,000

Other management measures

Deemed values

90 Under s 75(1) of the Act, you are required to set interim and annual deemed value

rates for each quota management stock. Section 75(2A) requires you, when setting deemed value rates, to take into account the need to provide an incentive for every commercial fisher to acquire and hold sufficient ACE, in respect of each fishing year, that is not less than the total catch of that stock taken by the commercial fisher.

91 MFish developed a Deemed Value Standard in 2007 to set out a process for managing the setting, reviewing and amendment of deemed value rates.

92 The approach adopted in the Deemed Value Standard is to set deemed values for a fishstock between the ACE price and landed price. This creates an economic incentive for fishers to act appropriately and balance any overcatch against ACE, if ACE is available. Alternatively, if ACE is not available, this approach creates an economic incentive to land and record any over-caught fish rather than discard them at sea.

93 The port price available at the time of writing MFish's initial position paper was $1.05 per kg. SeaFIC refers to the recently available 2010/11 port price of $1.13 per kg. This port price and an updated ACE price is now the best available information, and have both been incorporated in Table 3 below.

Table 3: Current ACE price ($), port price ($) and annual deemed value ($) for STA 7

Stock	ACE price	Port Price	Deemed value
STA 7	$0.62 per kg	$1.13 per kg	$1.45 (20% differentials)

94 AFL support MFish's initial position, which proposed raising the annual deemed value rate to $1.65 per kg.

95 NZRFC did not comment specifically on STA 7 deemed values, but support the setting of annual deemed value rates at a calculation of three times the port price. For STA 7 this would equate to an annual deemed value rate of $3.39 per kg.

96 SeaFIC note that the current annual deemed value rate is higher than the port price, and suggest that MFish's initial position would lead to greater incentives for discarding. Challenger Finfish and Te Ohu also oppose the proposed increases and advocate for decreases to the current deemed value rates. Challenger Finfish suggest an annual deemed value rate of $1.01 per kg and SeaFIC, supported by Te Ohu, suggest an annual deemed value rate of $0.90 per kg.

97 STA 7 is primarily taken as bycatch, but fishery information and information provided by Challenger Finfish in their request for a TAC review, indicate giant stargazer can be both avoided and targeted when trawling.

98 While MFish's general policy is to set deemed values for a fishstock between the ACE price and port price, information shows that STA 7 commercial landings are likely to exceed the TACC of 997 t in the 2009/10 fishing year, despite an annual deemed value rate of $1.45 per kg.

99 MFish's initial position was to propose an increase to the annual deemed value rate to increase incentives on fishers to fish within their ACE holdings. This must be balanced against the risks identified by SeaFIC that an increase could lead to greater incentives for discarding.

100 MFish now recommends that the annual deemed value rate be retained at $1.45 per

kg, but that the interim deemed value rate be increased from 50% to 90% of the annual deemed value rate for STA 7 to encourage fishers to balance their catch with ACE more regularly.

101 The following deemed value rates for STA 7 are proposed for the 2010/11 fishing year:

- Annual deemed value rate to be retained at $1.45 per kg;
- Interim deemed value rate to be increased to $1.31 per kg;
- Standard differential deemed value rates to be retained at current levels as, outlined in the table below.

Table 4: Differential deemed value rates for STA 7

Current differential rates	
Catch in excess of ACE holdings (%)	**Current deemed value rate for STA7 ($)**
20	1.74 per kg
40	2.03 per kg
60	2.32 per kg
80	2.61 per kg
100	2.90 per kg

102 No additional management measures are proposed for this fishery.

Recommendation

103 MFish recommends that, for the STA 7 fishery, for the fishing year commencing on 1 October 2010, you:

EITHER

a) **Agree** to increase the TAC from 1000 t to 1025 t and within this:

i) **retain** an allowance for customary fishing of 1 t;

ii) **retain** an allowance for recreational fishing of 2 t;

iii) **set** an other sources of fishing-related mortality at 25 t; and

iv) **retain** a TACC of 997 t.

OR

b) **Agree** to increase the TAC from 1000 t to 1072 t (MFish preferred option) and within this:

v) **retain** an allowance for customary fishing of 1 t;

vi) **retain** an allowance for recreational fishing of 2 t;

vii) **set** an other sources of fishing-related mortality at 27 t; and

viii) **increase** the TACC from 997 t to 1042 t.

OR

c) **Agree** to increase the TAC from 1000 t to 1128 t (MFish preferred option) and within this:

ix) **retain** an allowance for customary fishing of 1 t;

x) **retain** an allowance for recreational fishing of 2 t;

xi) **set** an other sources of fishing-related mortality at 28 t; and

xii) **increase** the TACC from 997 t to 1097 t.

AND

d) **Agree** to retain the following deemed value rates

Current differential rates	
Catch in excess of ACE holdings (%)	**Current deemed value rate for STA7**
20	$1.74 per kg
40	$2.03 per kg
60	$2.32 per kg
80	2.61 per kg
100	2.90 per kg

AND

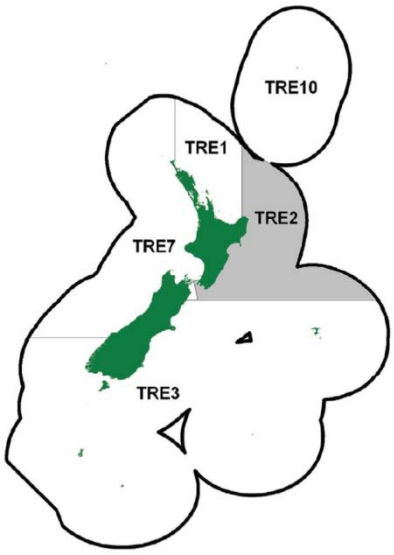
e) **Agree** to increase the interim deemed value rate from 50% to 90% of the annual deemed value rate for STA 7 (MFish preferred option)

OR

f) **Agree** to retain the existing interim deemed value rate.

Trevally (TRE 2)

Figure 1: Quota Management Area (QMA) for TRE 2



Summary

1 The Ministry of Fisheries (MFish) recommends you either increase the TAC from 241 t to either 349 t (Option 1) or 371 t (Option 2) for the start of the 2010/11 fishing year. Both options involve the setting of allowances for other sources of fishing related mortality and Maori customary and recreational interests for the first time. New information on relative abundance in the TRE 2 fishery may become available in 2011 and this may provide a better foundation to vary TACs and monitor stock health in the future.

2 MFish also recommends that you increase the annual deemed value rate from $1.10 per kg to $1.25 per kg, increase the interim deemed value rate from $0.55 per kg to $0.70 per kg, increase the 110% differential deemed value rate from $2.00 per kg to $3.50 per kg and the 120% differential deemed value rate from $3.00 per kg to $5.00 per kg. The new deemed value rates will provide increased incentives for fishers to constrain fishing to their available Annual Catch Entitlement (ACE) holdings.

Background

3 TRE 2 was introduced into the Quota Management System (QMS) in 1986. The initial TAC was set at 190 t and applied only to commercial fishing. From 1990, the TAC became the TACC. The TACC increased as a result of a Quota Appeal Authority decisions, reaching 241 t in 1992/93. It has remained at that level since. A TAC and allowances for non-commercial fishing and other sources of fishing-related mortality have not yet been set for TRE 2 and are proposed for the first time in this paper.

4 TRE 2 is being reviewed for the 2010/11 fishing year due to sustained catches in excess of the TACC with no apparent decline in abundance as well as fishing industry requests, and the potential for improved utilisation of this stock.

5 You are being asked to vary the TAC for this stock under s 13 of the Act and to vary the TACC under s 21 of the Act. To assist you to make decisions this paper sets out:

- Background on biological characteristics of the stock, a description of the fishery and best available information on stock status;
- Analysis to inform your decision on varying the TAC, including points raised in submissions; and
- Analysis of matters to inform your decision on allocating the TAC, including points raised in submissions.

6 This paper also contains proposals to amend the deemed value regime for this stock.

Consultation

7 MFish released an IPP for public consultation on 21 June 2010, with submissions closing on 26 July 2010. The IPP was published on the consultation section of the MFish website and posted and emailed to persons and organisations with an interest in TRE 2.

Submissions received

8 MFish received eleven submissions on the TRE 2 IPP from:

- Area 2 Inshore Finfish Management Company Ltd. (Area 2)
- Aotearoa Fisheries Ltd (AFL)
- Challenger Fin Fisheries Management Company Ltd. (Challenger)
- Ngati Kahungunu Iwi Incorporated (NKII)
- Option4, the Hokianga Accord, NZ Sport Fishing and the Council's Zone 4, 4 and 8 Bay of Plenty Clubs (Option4)
- Sanford Limited (Sanford)
- Te Ohu Kaimoana (Te Ohu)
- The New Zealand Federation of Commercial Fishermen (NZFCF)
- The New Zealand Recreational Fishing Council (NZRFC)
- The New Zealand Seafood Industry Council Limited (SeaFIC)
- Zone 5 Fishing Clubs affiliated to the NZ Sports Fishing Council Inc. (Zone 5).

9 Submissions are attached (Appendix A). In general, non-commercial stakeholders expressed concerns that commercial catch data should not be used to justify an increase in the TACC and supported the proposed deemed values (or higher). On the other hand, commercial stakeholders consider the lack of data relating to TRE 2 has resulted in MFish taking too cautious an approach in setting the TACC and, in general, that deemed values should not be increased unless there are corresponding TACC increases.

Biological Characteristics of Trevally

10 Trevally are both pelagic and demersal in behaviour. Trevally are not known to be naturally highly variable from year to year. Trevally is relatively long-lived (in excess of 40 years of age) and moderately productive. Estimates of natural mortality and growth parameters for the TRE 2 stock are not available.

TRE 2 Fishery

11 Since entry into the QMS in 1986, the TRE 2 TACC has been exceeded in 15 of 23 years, by between 1% and 73%. Although commercial landings have varied over that time, average landings per fishing year since 1986 are approximately 262 t. The average landings per fishing year over the past 10 years are approximately 292 t, and the average landings for the last 5 years are approximately 327 t. Reported TRE 2 landings and actual TACCs are shown in Table 1, below.

Table 1: Reported landings (t) of Trevally (TRE 2) from 1983 to 2008/09 and actual TACs (t) from 1986/87 to 2008/09. QMS data from 1986-present

Year	Landings	TACC
1983	77	–
1984	335	–
1985	162	–
1986	161	–
1986–87	237	190
1987–88	267	219
1988–89	177	235
1989–90	275	237
1990–91	273	238
1991–92	197	238
1992–93	247	241
1993–94	230	241
1994–95	179	241
1995–96	211	241
1996–97	317	241
1997–98	223	241
1998–99	284	241
1999–00	309	241
2000–01	211	241
2001–02	243	241
2002–03	270	241
2003–04	251	241
2004–05	319	241
2005–06	417	241
2006–07	368	241
2007–08	230	241
2008–09	302	241

12 Over the last 10 years, the proportion of TRE 2 catch taken as target has varied from 5 – 17%. TRE 2 is most commonly caught as bycatch in the gurnard (GUR 2), tarakihi (TAR 2) and snapper (SNA 2) target bottom trawl fisheries. For example, since 1999, an average of 54% of TRE 2 catches have been caught by fishers when targeting GUR2 and an average of 26% of TRE 2 catches have been caught by fishers when targeting TAR 2.

13 Both TAR 2 and GUR 2 landings appear to have been relatively stable in recent years. The number of hours fished for TAR 2 has been relatively constant since 1996/97 although vessel numbers have almost halved between 1994/95 and 2006/07. The remaining vessels may be more efficient, resulting in more TRE bycatch in the TAR and GUR fisheries.

14 The finfish commercial stakeholder organisation for FMA 2 has previously acknowledged that trevally catch can be avoided or minimised when trawling by reducing trawl speed (trevally are fast swimming fish).

15 MFish understands that TRE 2 is an important stock for Maori customary fishers. However, MFish does not have reliable quantitative information on the level of TRE 2 Maori customary catch. Harvest under customary permits reported to MFish totals just 50 fish since 2007. This information does not necessarily provide a reliable estimate of customary take as the reporting regime does not cover the entire fishery.

16 Estimates of recreational catch from recreational harvest surveys are available. However, the MFish Recreational Technical Working Group suggests caution when using the data from these surveys, noting that:

- They "may be very inaccurate";
- Earlier surveys "may contain methodological errors"; and
- Recent survey estimates are "implausibly high".

17 The most recent recreational TRE 2 catch estimates are 160 t in 2000 and 339 t in 2001. MFish recognises that recreational catch will vary between years and accepts that the estimated 339 t in 2001 is implausibly high, especially when viewed in the context of commercial TRE 2 catches of 243 t in the same year.

18 The inaccuracy of the TRE 2 recreational catch estimates are supported by TRE 1 recreational catch analysis from 2005 boat ramp and aerial over flight surveys. These surveys estimated that only 105 t of trevally was being taken from QMA 1 by recreational fishers. QMA 1 encompasses Auckland and the largest number of recreational fishers in New Zealand.

TRE 2 Stock Status

19 No estimates of current stock size ($B_{current}$) or the stock size that would support the maximum sustainable yield (B_{MSY}) are available for TRE 2. Nor is there an index showing relative abundance through time for the fishstock. Catch information is the only available information which can indicate stock status.

20 An estimate of maximum constant yield (MCY) of 310 t for TRE 2 was determined from average commercial landings over the period 1977 to 1986. That estimate has not been updated. The risk to the TRE 2 stock posed by harvesting at the MCY has not been assessed. The MCY estimate was based on catches prior to QMS introduction and there is the risk that the catch landings data were unreliable then. In addition, catches between 1983 and 1986 varied widely and the estimate does not include estimates of total mortality or non-commercial catch, which raises further uncertainty about the MCY estimate as a basis for management.

21 MFish currently has a research project underway that is characterising the FMA 2 fisheries and will provide Catch per Unit Effort (CPUE) indices of relative abundance for key species (including TRE 2) by March/April of next year. Future management of the stock can be reviewed in light of the new information available in 2011.

Management Options

22 MFish proposed three options for TRE 2 TAC allowances:

Table 2: Management Options Proposed in the IPP for TRE 2

Option	TAC	Customary allowance	Recreational allowance	Other sources of mortality	TACC
1	349	1	100	7	241
2	371	1	100	8	262
3	402	1	100	9	292

Total Allowable Catch

23 The current status of TRE 2 in relation to B_{MSY} is unknown and is unable to be reliably estimated using the best available information. In such circumstances, you may set a TAC under s 13(2A) of the Fisheries Act.

24 Section 13(2A) requires you to have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stocks. It requires you to set a TAC:

- Using the best available information; and
- That is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, B_{MSY} .

25 You must not use the absence of, or uncertainty in, the best available information as a reason for postponing or failing to set a TAC.

26 In considering the way in which and rate at which a stock is moved towards or above B_{MSY}, you must have regard to such social, cultural, and economic factors as you consider relevant.

Analysis

27 For TRE 2, best available information to inform TAC setting at this time is commercial catch history, (and the MCY derived from this history), recreational catch estimates, Maori customary permit reports and information on trevally biology and behaviour. Commercial catch provides an indication of the TRE 2 fishery performance over the 23 year period since QMS introduction. On its own, catch is not considered a reliable indicator of abundance or stock status.

28 The latest Plenary Report notes that is not known if the catches over the last few years are sustainable. While there is no reliable information to show whether or not recent increased catches of TRE 2 are related to an increased abundance of trevally, there is also no information to suggest that a higher TAC would not ensure sustainability.

29 MFish notes that a new CPUE analysis for TRE 2 and other FMA 2 stocks is expected in 2011 and that the analysis has the potential to provide for significantly improved information to inform the setting of the TRE 2 TAC. However, as CPUE analysis has not been undertaken for FMA2 before, MFish notes the potential risk that the analysis may not be successful or that the working group may not accept the index of abundance results.

30 The TAC proposed under each option is slightly above the plenary estimate of MCY (310 t). There is, however, considerable uncertainty in the MCY estimate. In particular the MCY estimate was based on commercial catches prior to QMS introduction and there is the risk that the catch landings data were unreliable then. In addition, catches between 1983 and 1986 varied widely, which raises further uncertainty about the MCY estimate as a basis for management.

31 The inter-annual variability in catch over time, and the often small number of fishers responsible for the overcatch, suggests that this is not a simple situation of increasing bycatch of TRE 2 in other stable target fisheries. The catch variability is likely to be driven either by changes in fisher behaviour (variable targeting) or changes in the catchability/availability of TRE 2.

32 A comprehensive understanding of these factors is not currently available but analyses and discussions with fishers in respect of deemed value setting suggest a portion of overcatch in recent years is a response to profitable markets (despite having to pay deemed value payments) having been secured by some fishers.

33 Both commercial and non-commercial stakeholders (Option4, SeaFIC, AFL, Area 2, Te Ohu and NKII) identified that the new CPUE characterisation analysis should provide significantly improved information, allowing MFish greater confidence when reviewing the TRE 2 TAC. As noted above, MFish acknowledges that there is the potential for significantly improved information to become available when the CPUE analysis is reported back in early 2011. However, after analysing the currently available information, MFish is confident that the TAC recommendations contained within this paper are sufficiently robust to allow you to approve an increased TAC that provides modest but immediate utilisation benefits to the fishery. MFish may look to undertake further review of TRE 2, following the consideration of the new information due in early 2011.

34 SeaFIC and Area 2 suggest that MFish should use ‘a consistent approach to reviewing TACCs for low knowledge stocks’, noting that in 2006, when MFish reviewed a number of low knowledge stocks, it considered seven years average commercial catch plus 10% to allow for additional growth in catch levels as appropriate. SeaFIC note that if this approach was used for TRE 2, the TACC would be 340 t, which is higher than the TACC suggested by option 3 in the IPP.

35 In addition, several submissions from commercial stakeholders express a view that the lack of data relating to this stock has resulted in MFish taking too cautious an approach. MFish notes the commercial stakeholder comments; however, given the lack of information on TRE 2, MFish considers its TAC options represent a responsible approach, pending new information, on relative abundance due out next year. MFish is confident that it has assessed the stocks on currently best available information and proposed a range of TACs based on best available information, rather than any particular policy.

36 On the other hand, Option4 submit that “current biomass, abundance and availability of Trevally in Area 2 is not providing for all New Zealander’s social, economic and cultural well-being” and that due to this the TAC should be set at 337 t, even lower than Option 1. MFish believes that an option that is lower than the status quo is not supported by currently available information that shows no evidence of decline in abundance of the stock from catches at historic levels. However, there is only limited data available on stock abundance. MFish believes that a TAC set at, or above, status quo is appropriate.

37 Zone 5 provided records of Hawkes Bay Sports Fishing Club's ramp surveys over the last three years, claiming the records showed 'a steady decline' in Trevally abundance. In analysing the information provided (noting that the level of survey accuracy cannot be determined), MFish notes that it is difficult to draw the conclusion of a 'steady decline' from three data points. Further, MFish notes that while the survey's reported catch rate for Trevally appeared to decline between the 2006/07 and 2008/09 seasons, it increased between the 2008/09 season (0.08 fish per angler day) and the 2009/10 season (0.11 fish per angler day).

38 Both Option 4 and Zone 5 expressed a concern that commercial catch data should not be used to justify an increase in the TACC. They express a concern that this methodology may act as an incentive for commercial fishermen to 'over catch' in future years. MFish notes this concern, however, as discussed above, while there is no reliable information to suggest that recent catch of the TRE 2 is related to an increased abundance of trevally, there is also no information to suggest that a higher TACC could not ensure sustainability, along with appropriate monitoring and management responses, to provide for increased utilisation whilst ensuring sustainability. MFish notes that new information on relative abundance of TRE 2 is expected in 2011.

Relevant Factors

39 Relevant matters for you to take into account in setting or varying a TAC include:

- Any effects of fishing on any stock and the aquatic environment;
- Any existing management controls under the Fisheries Act that apply to the stock or area concerned; and
- The natural variability of the stock.

40 You must also take into account the following environmental principles:

- Associated or dependent species should be maintained above a level that ensures their long-term viability;
- Biological diversity of the aquatic environment should be maintained; and
- Habitat of particular significance for fisheries management should be protected.

41 The majority of TRE 2 commercial take is as bycatch in bottom-trawl fisheries targeting gurnard and tarakihi. As the TAC proposals do not affect catch limits for the key species targeted when TRE 2 is taken or exceed historical recorded landings of TRE 2, it is not anticipated that the proposed TAC (and TACC) options would result in a significant change to fishing operations. Therefore, it is not anticipated there will be an increase in impacts on the marine environment or on the harvest of other stocks. Nor is it anticipated that the proposed TAC (and TACC) options will change fishing operations in a way that will affect the interdependence of these stocks.

42 Standard management controls apply to the TRE 2 fishery, for example amateur bag limits, amateur minimum size limits, and fishing method constraints. The proposed changes to the TAC do not affect these measures.

43 Trevally is not known to be naturally highly variable from year to year. Trevally is relatively long-lived and moderately productive. The species is, therefore, moderately vulnerable to overfishing and caution should be taken when increasing catch limits.

44 As noted above, the TAC proposals do not affect catch limits for the key species targeted when TRE 2 is taken or exceed historical recorded landings of TRE 2.

Therefore, it is not anticipated there will be a significant increase in impacts on the marine environment or associated and dependent species. No habitats of particular significance have been identified in QMA2.

45 You must also have regard to, or take into account, certain other matters set out below.

46 MFish is not aware of any provisions in any statement or plans under the Resource Management Act 1991 that are specifically relevant to setting a TAC for this stock.

47 MFish is not aware of anything in the provisions of management strategies or plans for relevant Conservancies that are relevant to these proposals.

48 TRE 2 does not intersect with the Hauraki Gulf Marine Park. Therefore, there are no relevant considerations under the Hauraki Marine Park Act 2000.

49 MFish is not aware of any fisheries or conservation services, or any decisions not to require fisheries or conservation services, which are relevant to setting a TAC for this fish stock.

50 You must take into account any relevant Fisheries Plan for TRE 2. At this time there is no relevant Fisheries Plan that has objectives that would impact on setting a TAC for TRE 2.

51 In setting or varying sustainability measures, you must also act in a manner consistent with New Zealand's international obligations to fishing and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

52 A wide range of international obligations relate to fishing, including use and sustainability of fishstocks; and maintaining biodiversity (s 5(a)). MFish considers that the management options for TRE 2 are consistent with these international obligations.

53 MFish also considers the proposed management options to be consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (s 5 (b)). Ongoing work is being done within the area covered by TRE 2 to promote policies that help to recognise customary use and management practices.

Options

Option 1 – Status quo and new allowances (349 t)

54 Under Option 1, a TAC of 349 t would be established based on the current TACC (241 t), and estimates of current catches (including customary and recreational), and other sources of fishing related mortality.

55 Option 1 is the most cautious option; it does not provide for any increased utilisation. This option places greatest weight on the uncertainties regarding the status of the stock. There is no estimate of stock size reletive to B_{MSY} and no estimate of sustainable yield.

Option 2 – TAC increase based on commercial catch history (371 t)

56 Option 2 proposes a TAC based on average reported commercial landings over the 23 years since TRE 2 entered the QMS (prior to this time, commercial catch information was less reliable) as well as estimates of current catches (including customary, recreational) and other sources of mortality.

57 The TAC under this option is above the MCY estimate (310 t). However, the MCY estimate is highly uncertain (for reasons noted earlier). Total catches from the fishery (based on best available information) are likely to have exceeded the MCY estimate for a number of years. There is no evidence of decline in abundance of the stock from catches at historic levels. However, there is only limited data available on stock abundance.

Option 3 – TAC increase based on recent commercial catch history (402 t)

58 Option 3 proposes a TAC based on average commercial landings over the past 10 years and estimates of current catches (including customary, recreational) and other sources of mortality, noting this is average is influenced by relatively high commercial catches in four of the last five years.

59 This option proposes the greatest increase to utilisation (31 t greater than option 2). This option is further above the MCY estimate; however the MCY estimate is uncertain. There is no information to indicate that catches over the last 10 years have impacted on abundance in the fishery, although it is unclear how well catch reflects abundance. The aggregating nature of Trevally creates the possibility that Trevally catches could be maintained despite an underlying decline in biomass.

Allocation of the TAC

60 When setting any TAC, that TAC must be apportioned between the relevant sectors and interests set out under the provisions of s 21 of the Act. Section 21 requires you to allow for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

61 The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on the best available information.

62 In terms of the allocation of the TAC, the submissions from NKII, RZRFC and Zone 5 all state that of the three choices offered, option 1 is the only viable option. NKII and Zone 5 state that the TACC should not be increased, in order to preserve the size of the TRE 2 stock while NZRFC state that while increasing the recreational allowance to 100 t goes some way towards being “fair and reasonable”, it still does not allow for a “fair and reasonable expectation of a decent catch”.

63 Option 4 rejects all options put forward by MFish in the IPP in favour of a “fourth option” made up of a TAC of 337 t, including a customary allowance of 10 t, a recreational allowance of 120 t, an allowance for other mortality of 7 t, and a reduced (from current) TACC of 200 t to “repay excessive past commercial catches”.

Maori Customary Non-Commercial Interests

64 As set out in the TRE 2 Fishery section above, MFish does not have reliable quantitative information on the level of TRE 2 customary Maori catch. Based on information from customary permits, MFish proposes a customary allowance of 1 t for all options.

65 NKII recommend an allowance of 60 to 80 t for customary interests, based on consultation with their Kaitiaki. This submission states that a higher allocation to

customary interests would help to ensure that the capacity and capability to use the resource is more readily available to tangata whenua.

66 Te Ohu note that customary reporting requirements vary around the country and therefore the current level of customary reporting should not be interpreted as the total customary take or needs. Te Ohu suggest that the customary allowance be raised to 5 t based on feedback from Iwi and prior to the development of their work into gaining more accurate information of the customary needs of Iwi/Hapu.

67 MFish notes NKII and Te Ohu's comments and acknowledges the limitations in information on customary take. MFish understands that TRE 2 is an important stock for customary fishers. However, MFish does not have reliable quantitative information to suggest a level of customary catch higher than 1 tonne. MFish will review this allowance as new quantitative information becomes available.

68 Section 21(4) requires that any mätaitai reserve or closures/restrictions under s 186A to facilitate customary Maori fishing be taken into account. MFish is aware of the Moremore Mätaitai reserves. MFish notes that the proposals in this paper will not impact on, or be impacted by, the Mataitai reserve.

Recreational Interests

69 In light of the current inaccuracies around TRE 2 recreational catch estimates, MFish proposes setting an initial recreational allowance of 100 t. This proposal accepts that the estimated catches of 160 t in 2000 and 339 t in 2001 are likely to be over estimates and that the catch is not likely to be more than the recent and improved 2005 estimate for TRE 1 of 104.7 t.

70 Submissions from the commercial sector request that the proposed recreational fishing allowances be decreased. Several submissions also suggest a range of options for the recreational allowance should have been proposed, as was done for the TACC in the IPP. Area 2 suggest a recreational allowance "based on extrapolation of population based on landings in TRE 1", recommending a recreational allowance of 42 t.

71 The general view from the commercial sector appears to be that the recreational fishing allocation of 100 t is unjustified due to the high level of uncertainty in the recreational catch data. SeaFIC state "the proposed TACC increases are insignificant when compared with the uncertainty in the recreational catch data", while AFL noted that without full characterisation of the fishery, an additional 80 t for recreational interests "may increase the sustainability risk of the fishery".

72 Option4 propose increasing the recreational allowance to 120 t while Te Ohu believes that due to the inaccuracies in recreational catch data, the recreational allowance should be set at 20 t.

73 MFish notes the concerns raised in regards to uncertainty over the recreational catch limit proposed. However, MFish believes that the proposed 100 t allowance represents best available information at this time. MFish will review allowances as new quantitative information becomes available.

Allowance for other sources of fishing-related mortality

74 There are various sources of fishing-related mortality for TRE 2. These include mortality caused by fish passing through the trawl net, undersized fish being returned dead or not surviving being returned to the sea, and illegal take or discarding of trevally.

75 MFish notes that when recommending a mortality allowance, the best information that is currently available is from other fisheries that have a similar mortality profile to trevally. As a result, MFish proposes providing an allowance for other sources of fishing related mortality similar to that set for kahawai fisheries, which is 2% of the TAC. To reflect the greater proportion of total TRE 2 catch that is taken by the trawl method when compared to kahawai, an additional 1% has been added, leading to a proposed mortality allowance of 3% of TAC. The trawl method results in a greater level of mortality to fish than purse seine, which is the predominant method of harvesting kahawai.

Total Allowable Commercial Catch (TACC)

76 MFish proposed three options for the TACC in the IPP as follows:

Option 1 - 241 t based on a TAC of 349 t;

Option 2 - 262 t based on a TAC of 371 t; and

Option 3 - 292 t based on a TAC of 402 t.

77 Based on the latest 2010/11 port prices of $2.18 per kilogram, the following table sets out the potential additional revenue that the different options for setting the TRE 2 TACC would provide[35]

Table 3: Proposed TACCs (t) and corresponding change in annual economic return ($) for TRE 2

Option	Proposed TACC	Potential additional revenue over status quo
1	241	nil
2	262	$45,780
3	292	$111,180

78 NZFCF and SeaFIC all suggest the TACC should be increased to a level higher than stated in any of the options proposed by MFish.

Other management measures

Deemed values

79 Under s 75(1) of the Act, you are required to set interim and annual deemed value rates for each quota management stock. Section 75(2A) requires you, when setting deemed value rates, to take into account the need to provide an incentive for every commercial fisher to acquire and hold sufficient annual catch entitlement (ACE) in respect of each fishing year that is not less than the total catch of that stock taken by the commercial fisher.

80 MFish developed a Deemed Value Standard in 2007 to set out a process for managing the setting, reviewing and amendment of deemed value rates. This standard intends to set deemed values for a fishstock between the ACE price and landed price (see table below). This approach creates an economic incentive for fishers to act appropriately and balance any overcatch against ACE, if ACE is

[35] Note that the figures below are higher than those presented in the IPP, due to the fact that when the IPP was published, the 2010/11 port prices were unavailable.

available. Alternatively, if ACE is not available, this approach creates an economic incentive to land and record any overcaught fish rather than discard them at sea.

81 The port price has increased $0.64 to $2.18 per kg and the ACE price has fallen $0.07 to $0.75 per kg.

Table 4: Current ACE price, port price and annual deemed value for TRE 2

Stock	ACE price	Port Price	Current deemed value	Proposed deemed value
TRE 2	$0.75	$2.18	$1.10	$1.25

82 MFish proposes an increase to the existing annual deemed value from $1.10 per kg to $1.25 per kg in order to retain incentives for fishers to balance catch with ACE. MFish also proposes to increase interim deemed value rates from $0.55 per kg to $0.70 per kg. The proposed new deemed value rates are consistent with the current MFish deemed value standard that allows for the setting of deemed value rates up to 90% of port price.

83 In addition, MFish is proposing a new differential deemed value structure for TRE 2. This is because:

- It has been consistently over fished in recent seasons (on average, 135% of available ACE since 2004/05), and;
- Deemed value invoices of $103,188 were issued at the end of the 2008/09 fishing season.

84 Therefore, MFish proposes that current unique differential deemed value rates (ramping) will remain in TRE 2, but that the value of the 110% ramp will increase from $2.00 per kg to $3.50 per kg and the 120% ramp will increase from $3.00 per kg to $5.00 per kg. This will ensure that any opportunity to gain financially from fishing on deemed values is removed.

85 Note that the 1 October Deemed Value review FAP recommends proposed changes to the deemed value rates for TRE1 in order to bring them into line with what is proposed in this paper for neighbouring stock, TRE2, in order to not incentivise misreporting catch.

86 Option4 state that the proposed TRE 2 deemed value increase to $1.25 per kg is too low to equate to the $1.54 per kg port price and will fail to ensure that commercial fishers will not exceed their ACE.

87 The submission from NKII supports the proposed deemed value increase to $1.25 per kg.

88 Sanford supports an increase in deemed values in order to help ensure the sustainability of stocks by making it uneconomical for fishers to catch fish without ACE.

89 AFL does not support increasing deemed values or deemed value differential rates.

90 Three submitters (SeaFIC, Te Ohu and Area 2) suggest the deemed values cannot be determined unless the TACC has been determined. All three submissions states that unless the TACC increases, the deemed values should not increase.

91 MFish notes that TRE 2 is not an unavoidable bycatch species and that the number of fishers significantly exceeding their ACE holdings is small.

92 Therefore, MFish recommends deemed value rates for TRE 2 for the 2010-11 fishing season under all TAC options increase as follows:

- Annual deemed value rate to increase from $1.10 per kg to $1.25 per kg.
- Interim deemed value rates to increase from $0.55 per kg to $0.70 per kg.
- Differential deemed value rates adjusted as set out in the table below:

Table 5: Current and proposed deemed value ramp rates for TRE 2

Percentage above Deemed Value	Current Deemed Value	Proposed Deemed Value
110 – 120%	$2.00 per kg	$3.50 per kg
120% +	$3.00 per kg	$5.00 per kg

Recommendation

93 MFish recommends that, for the TRE 2 fishery, for the fishing year commencing on 1 October 2010, you:

EITHER

a) **Agree** to set a TAC of 349 t (MFish preferred option) and within this:

i) **set** an allowance for customary fishing of 1 t;

ii) **set** an allowance for recreational fishing of 100 t;

iii) **set** an other sources of fishing-related mortality at 7 t; and

iv) **retain** a TACC of 241 t.

OR

b) **Agree** to set a TAC of 371 t (MFish preferred option) and within this:

v) **set** an allowance for customary fishing of 1 t;

vi) **set** an allowance for recreational fishing of 100 t;

vii) **set** an other sources of fishing-related mortality at 8 t; and

viii) **increase** the TACC from 241 t to 262 t.

OR

c) **Agree** to set a TAC of 402 t and within this:

ix) **set** an allowance for customary fishing of 1 t;

x) **set** an allowance for recreational fishing of 100 t;

xi) **set** an other sources of fishing-related mortality at 9 t; and

xii) **increase** the TACC from 241 to 292 t.

AND

d) **Agree** to increase the interim deemed value rate from $0.55 to $0.70

AND

e) **Agree** to increase the annual deemed value rate from $1.10 to $1.25

AND

f) **Agree** to increase the differential deemed value rates as per the following table:

Differential rates	
Catch in excess of ACE holdings (%)	**Deemed value rate**
10 - 20	$3.50 per kg
20+	$5.00 per kg

Deepwater Sustainability Round

BLACK CARDINALFISH (CDL 2)

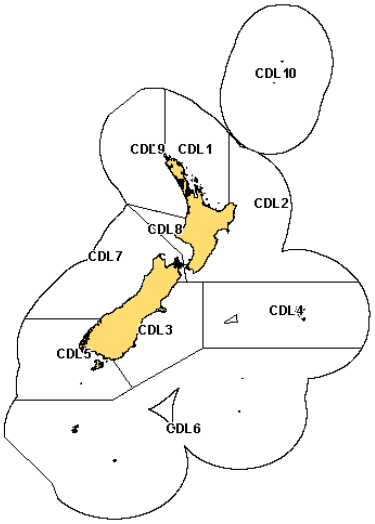


Figure 1: Quota Management Areas (QMAs) for black cardinalfish

Executive summary

1 A stock assessment for black cardinalfish in CDL 2 was undertaken in 2009. Although uncertain, the stock assessment showed that the stock is likely to be below 20% of the biomass before the fishery began (B_0); with the best available estimate suggesting the stock is at 11.9% B_0. The biomass that can support the maximum sustainable yield (B_{MSY}) is likely to be in the order of 30% B_0. As such, the stock is likely to be below a biomass that can produce the maximum sustainable yield.

2 MFish recommends that the CDL 2 total allowable catch (TAC) is reduced from 1,780 t to 1,120 t (Option 2 in Table 1). This would be the second year of a three-year staged reduction. This second reduction is projected to halt the decline of the CDL 2 biomass. A third reduction in the 2011-12 fishing year would establish a rebuild consistent with the harvest strategy standard.

3 There is no known customary Maori or recreational take of black cardinalfish and it is recommended that zero allowances for these sectors be retained. An allowance of 10% of the total allowable commercial catch (TACC) is recommended for other mortality to the stock caused by fishing.

4 MFish also recommends increasing the interim deemed value from $0.15 to $0.26 per kg and the annual deemed value from $0.30 to $0.52 per kg. A differential deemed value of $0.60 per kg is also recommended for all catch that is more than 20% in excess of annual catch entitlement (ACE) holdings. This should ensure that fishers have the appropriate incentive to obtain ACE to cover their catch.

5 In response to your request last year, a pilot acoustic survey of black cardinalfish in CDL 2 was attempted in March 2010. The pilot survey was not able to provide any useful estimates of biomass but another survey is planned for 2011.

Background information

6 Black cardinalfish is a long-lived and slow-growing species that is found throughout the Exclusive Economic Zone (EEZ). Large and mobile schools form over hills and rough ground. These schools may be up to 150 m off the bottom at depths between 300 and 1,100 m.

7 In the early years of the fishery black cardinalfish was taken as a bycatch in higher-value deepwater trawl fisheries such as orange roughy and alfonsino, but is now almost exclusively targeted. It is a relatively low value species primarily sold domestically due to the short freezer life of fillets. The species also has a section of dark flesh under the lateral line that has caused problems with overseas marketing.

8 Black cardinalfish was introduced to the Quota Management System (QMS) in 1998 and the TACCs for the main fisheries (CDL 1 and 2) had, until last year, remained at their 1998 levels (2,223 tonnes).

Consultation

9 Your decision on adjusting the TAC for CDL 2 is a decision under section 13 of the Act and therefore the consultation requirements of section 12 apply. Further, in respect of your decision on adjusting the TACC for CDL 2, the consultation requirements set out in section 21(2) apply.

10 Consultation on the IPP was undertaken with such persons or organisations representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Maori, environmental, commercial and recreational interests.

11 MFish followed its standard consultation process for IPPs in the October 2010 sustainability round. This involved posting all IPPs on MFish's website and alerting stakeholders to this through a letter sent to approximately 350 companies, organisations and individuals.

12 MFish consulted on the two options that are set out in Table 1.

Table 1: Consultation options for CDL 2

	Option 1 (status quo)	Option 2 (MFish recommended option)
TAC (t)	1,780	1,120
Allowance for customary Maori (t)	0	0
Recreational allowance (t)	0	0
Other sources of fishing related mortality (t) (10% of the TACC)	160	100
TACC (t)	1,620	1,020

Submissions received

13 Submissions were received from the following:

a) Greenpeace Aotearoa New Zealand (Greenpeace)

b) Royal Forest & Bird Protection Society (Forest & Bird)

c) Environment and Conservation Organisations of NZ Inc (ECO)

d) Sanford Limited (Sanford)

e) New Zealand Seafood Industry Council Ltd (SeaFIC)

f) Mr Matthew Hardyment

g) Mr Mark Clayson

All submissions are attached as Volume Two to this paper for your reference.

Submissions on catch limits

14 Greenpeace submitted that the fishery should be closed and Forest & Bird effectively suggested the same by recommending the TAC be reduced to "close to zero". Similarly, ECO submitted that the TACs for CDL 2, 3 and 4 should be reduced to 1 tonne each; or initially reduced to 180 tonnes for CDL 2, 3 and 4 combined.

15 Sanford and SeaFIC noted that the proposal was part of a three-year phased reduction to rebuild the stock. SeaFIC considered that this approach was appropriate. Sanford submitted that the phased reduction had allowed it time to adapt its operations as the TACC decreased while ensuring a rebuild to sustainable levels. Sanford also submitted that the reduction was consistent with the Harvest Strategy Standard. Sanford and SeaFIC both supported increasing the deemed values.

16 Mr Clayson submitted that he did not agree to the increase of any TAC or TACC for any stock for the near future. In support of this view Mr Clayson stated that fish numbers were decreasing in the New Zealand EEZ.

17 Mr Hardyment is a fisherman with some 25 years experience. He agreed that biomass had declined, but also suggested that declining catches were due to fish becoming more flighty (highly mobile and ephemeral) and harder to catch; possibly related to increased shipping traffic in the area. Consequently Mr Hardyment submitted that MFish should be cautious about reducing the TAC too far.

Submissions on deemed values

18 SeaFIC agreed that the deemed values for CDL 2 should be increased to ensure catch is constrained to the (assumed) new TACC. Sanford also supported the increase to all deemed value rates. No other submitters commented on deemed values.

Rationale for management intervention

19 The recommended management action is based on the 2009 stock assessment that is detailed below.

The 2009 stock assessment

20 On the basis of the best available information, CDL 2, 3 and 4 are considered to be a single biological stock. A stock assessment in these three quota management areas was undertaken in 2009. The stock assessment model used catch per unit effort (CPUE) data, length frequency, maturity at length data and independently-derived

growth parameters to estimate stock status. The model also allowed forward projections to be made about the future status of the stock under a range of future catch scenarios.

21 There has been relatively little research into black cardinalfish and there are several inputs to the stock assessment that are uncertain. For this reason a range of four model runs were conducted. Of these, the "base case" (Figure 2) is considered the most credible, with additional runs presented to test the sensitivity of the model to two of the key areas of uncertainty used in establishing the model: (a) the estimated natural mortality of black cardinalfish and (b) the assumption in the base case that all adult black cardinalfish are able to be caught in the fishery (i.e. there is no cryptic biomass).

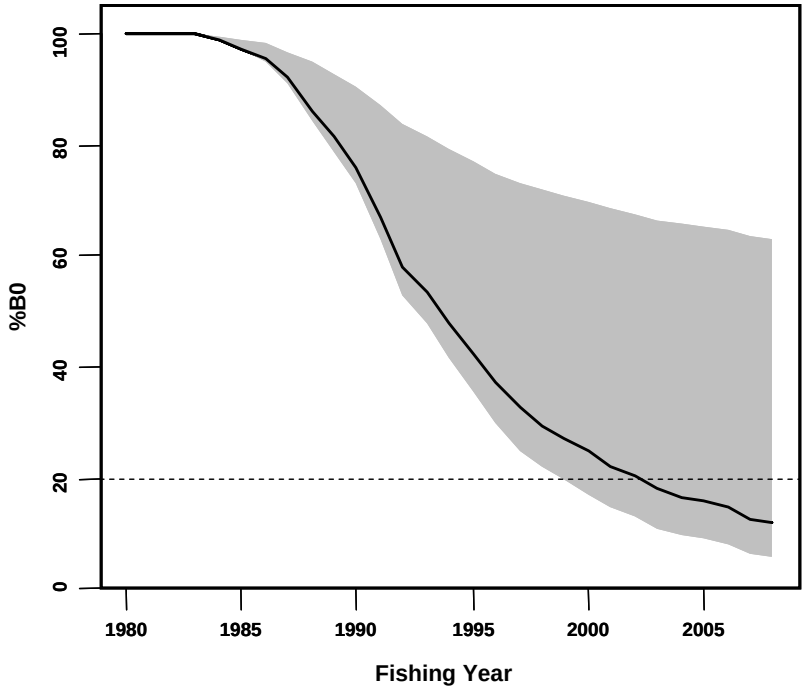


Figure 2: Estimated biomass trajectories (solid line) and 95% confidence intervals (shaded area) for the base case. The horizontal broken line indicates 20% B_0

22 The modelling results showed that:

a) the stock is estimated to be below $B_{MSY,}$ with the most credible estimate (the base case) suggesting the stock was at 11.9% B_0 at the time of the assessment;

b) projections using the base case indicated that the stock will not decline further if catch is reduced to around 1,000 t (e.g. it will rebuild slowly at a catch of 890 tonnes but will continue to decline slowly at a catch of 1,200 tonnes);

c) initiating a rebuild will require that catch is reduced below 1,000 t;

d) The wide range of the 95% confidence intervals indicates the high level of uncertainty in the stock assessment.

23 The information summarised above was used as the basis for the first year of the planned three-year phased reduction of catch limits for this stock.

Management measures proposed

Harvest Strategy

24 The Harvest Strategy Standard (the Standard) is a policy document that helps to guide the formulation of management options regarding the setting of TACs. The Standard establishes biological reference points (target, soft limit and hard limit) and guides the appropriate management response depending on where a stock is assessed to be in relation to these reference points. This includes guidance on the way and rate at which a stock can be moved towards or above B_{MSY}.

25 Given that the 2009 stock assessment concludes that the biomass of CDL 2 is likely to be below BMSY and between the soft limit (20% B_0) and the hard limit (10% B_0), the following are key components of the Standard relevant to CDL 2:

a) Stocks that have fallen below the soft limit require a formal, time-constrained rebuilding plan.

b) Such stocks should be rebuilt back to at least the target level in a time frame between T_{min} and 2 * T_{min} with an accepted probability.

c) T_{min} is the theoretical number of years required to rebuild a stock to the target in the absence of fishing.

26 Determining an appropriate rebuild period for the CDL 2 stock requires definition of a target reference point (at or above B_{MSY}.). Guidance on an appropriate rebuild period may be obtained assuming a target reference point equivalent to that for a similarly long-lived, low productivity deepwater species such as orange roughy of 30% B_0. On this basis, MFish has established a maximum acceptable rebuild time of 24 years using projections based on the most credible model run (i.e. 2 * Tmin). Based on the 2009 assessment, the TACC would need to be eventually reduced to approximately 420 t to rebuild the stock within a timeframe consistent with the Standard.

Continuing the rebuild strategy

27 As the biomass of CDL 2 is likely to be below B_{MSY}., MFish is recommending that you again reduce the TAC to move the stock toward B_{MSY}.. This second reduction is projected to stop the biomass of CDL 2 declining further, while the third reduction planned for 2011-12 is projected to start a rebuild of the stock. Based on current information, a third reduction for the 2011-12 fishing year would result in a TAC of 420 t.

28 Greenpeace and Forest & Bird submitted that the fishery should be closed while ECO submitted that the TACs for CDL 2, 3 and 4 should be reduced to 1 tonne each; or initially reduced to 180 tonnes combined. MFish does not consider that closing the CDL 2 fishery is necessary. The management recommended is part of a rebuilding plan that is projected to rebuild the CDL 2 fishery in a manner consistent with the Harvest Strategy Standard.

29 Further, closing the CDL 2 fishery would not provide for any utilisation. As can be seen from shaded area of Figure 2, there is significant uncertainty about the biomass of the CDL 2 stock. MFish considers that the combination of the rebuilding plan and the uncertainty about the status of the stock do not warrant curtailing utilisation completely. Rather the recommended reduction of the TAC as the second of three reductions should ensure the stock can be utilised and that rebuilding to B_{MSY} occurs.

Assessment of management measures

Setting the TAC – section 13

30 Although uncertain, the best available information estimated CDL 2 to be at approximately 11.9% of B_0. B_{MSY} for this stock is likely to be in the order of 30% B_0. Accordingly MFish recommends that the TAC is varied under s 13(2)(b) to enable CDL 2 to be restored to a level at or above B_{MSY}.

31 Section 13(2)(b) contains specific considerations that you must have regard to when setting the TAC:

a) The interdependence of stocks (s 13(2)(b)(i)). There is no information to suggest the interdependence of stocks should affect the level of the TAC for CDL 2 at this time, given that the fishery primarily targets aggregations of black cardinalfish and bycatch proportions are low.

b) Environmental conditions affecting CDL 2 (s 13(2)(b)(ii)). No specific environmental conditions affecting the CDL 2 stock have been identified.

c) The biological characteristics of CDL 2 (s 13(2)(b)(ii)). It is known that black cardinalfish are very long-lived and late maturing, which are biological characteristics that render them slow to recover from overfishing. These biological characteristics are taken into account in the stock assessment model.

32 Section 13(3) requires that in considering the way and rate at which a stock is moved towards B_{MSY}, you shall have regard to such social, cultural and economic factors you consider relevant.

33 MFish has considered the economic impact of reducing the TAC to the level required to rebuild the stock to an estimated target level in a timeframe consistent with the harvest strategy. On the basis of this assessment, MFish recommends continuing the three-year staged reduction of the TAC. This will allow Industry further time to rationalise their operations as the TAC decreases and will mitigate the social impact of reduced availability of ACE in the cardinalfish fishery.

34 Although black cardinalfish is a relatively low value species, the recommended 600 t TACC reduction represents a potential loss of earnings for quota owners of approximately $552,000.[36] The catch plans for vessels operating in CDL 2 typically include a mix of targeted black cardinalfish and more valuable target species such as orange roughy and alfonsino. The TAC reduction for black cardinalfish also has an impact on the economics of targeting these more valuable species. The staged reduction that commenced in 2009 will lessen the impact of these TAC reductions by spreading them over several years.

35 MFish considers that reducing the TAC more slowly over the next two years (rather than in a single larger reduction) will still ensure the sustainability of the CDL 2 stock. The recommended reduction is projected to halt the decline in CDL 2 biomass.

36 MFish is not aware of any recreational or customary Māori interest in the fishery that would constitute a social or cultural factor relevant to a determination under section 13(3).

[36] Based on the most recent port price of $0.92 per kg.

Environmental considerations

37 The Fisheries Act requires that when any effect of fishing is adverse this effect should be avoided, remedied or mitigated. More specifically, sections 9(a) and (b) require you to take into account that associated or dependent species be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

38 Key environmental issues associated with the CDL 2 fishery, and how they will be affected by the recommendations, are discussed below.

Finfish bycatch

39 While a number of deepwater species that share similar habitat to black cardinalfish are taken in the CDL 2 fishery (including orange roughy, alfonsino and bluenose) reported catch from targeted black cardinalfish tows suggests that black cardinalfish makes up approximately 90% of total catch by greenweight. No increase in the CDL 2 TAC is recommended and consequently there should be no additional effect on fish bycatch.

Shark bycatch

40 Deepwater sharks are taken in low numbers as a bycatch in CDL 2. The New Zealand National Plan of Action for the Conservation and Management of Sharks includes several actions to improve the monitoring of shark bycatch. No increase in the CDL 2 TAC is recommended and consequently there should be no additional effect on shark bycatch.

Marine mammals

41 There are few marine mammal interactions in deepwater trawl fisheries generally. MFish considers that the recommendations will have no additional effects on fur seals, sea lions or other marine mammals as no increase in the TAC is recommended.

Seabirds

42 Mandatory measures are in place across the deepwater fleet to address seabird captures, including the requirement that all trawlers deploy bird mitigation devices when fishing gear is in use. In addition, non-regulatory management includes vessel-specific measures known as vessel management plans (VMPs), which set out the onboard practices that vessels must follow to avoid seabird interactions, including offal management and good factory cleanliness. MFish currently monitors vessel performance against VMPs and works in collaboration with the Deepwater Group to rectify any issues that arise during the fishing season. This practice will continue during the 2010-2011 fishing year.

43 The number of observed seabird captures from the deepwater trawl fisheries (orange roughy, oreo, cardinalfish and alfonsino) generally has been decreasing since 2004-05, for example only six captures were recorded by observers from 2,810 tows in all deepwater fisheries in the 2007-08 fishing year. MFish is satisfied that existing regulatory and non-regulatory measures are appropriate and that the recommendations should have no additional effect on seabirds as no increase in the TAC is recommended.

Benthic impacts and coral bycatch

44 Bottom trawling can adversely affect fragile benthic invertebrate communities and two initiatives are in place to address benthic impacts generally. In 2001, the Minister

regulated 18 trawl closures to protect a selection of seamounts of varying size and depth within New Zealand. In addition, 17 further areas were closed in 2007 to bottom trawling and dredging by regulation under the BPA initiative. Two of the seamount closures and two of the BPAs are within the CDL 2 QMA. MFish considers that the recommendations will have no additional effects on the seabed as no increase in the TAC is recommended.

Section 11 considerations

45 In making your decision on sustainability measures for the CDL2 stock you must also have regard to the requirements of section 11 of the Act, as follows:

a) Section 11(1)(a): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any effects of fishing on any stock and the aquatic environment. No information about any effects of fishing on any stock or on the aquatic environment, additional to that discussed elsewhere in this paper, is considered relevant to the review of sustainability measures for this stock at this time.

b) Section 11(1)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC and an allowance for incidental fishing-related mortality. No other controls under the Act specifically apply to this stock.

c) Section 11(1)(c): Before setting or varying any sustainability measure for this stock, you must take into account the natural variability of the stock. This has been discussed previously.

d) Sections 11(2)(a) and (b): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and you consider relevant. MFish is not aware of any such policy statements, plans or strategies that should be taken into account for this stock.

e) Section 11(2)(c): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and you consider relevant. The boundaries of the quota management area for this stock do not intersect with the Park boundaries. Therefore, MFish considers there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2A)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take account of any relevant and approved fisheries plans. There is no approved fisheries plan in place for any deepwater stock at this time but the implementation of a deepwater fisheries plan is discussed in a later section.

g) Sections 11(2A)(a) and (c): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any conservation or fisheries services, or any decision not to require such services. MFish does not consider that existing or proposed services materially affect the proposals for this stock. No decision has been made to not require a service in this fishery at this time.

Allocating the TAC

46 The TAC must be apportioned between the relevant sectors and interests set out under the provisions of s 21 of the Act. Section 21 requires you to allow for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

47 The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on the best available information.

48 There is no known customary Maori or recreational take in CDL 2; as such, MFish recommends retaining nil allowances for these sector groups.

49 An allowance of 10% of the TACC currently exists for other sources of fishing-related mortality. MFish recommends retaining this allowance which would be reduced to 100 t (rounded) for the 2010-11 fishing year (Table 1).

50 As a consequence of the above allowances, under Option 1 the TAC would remain at 1,780 tonnes and a TACC of 1,620 tonnes would be allocated. Option 2 would result in a TAC of 1,120 tonnes and an allocation for the TACC of 1,020 tonnes.

Deemed values

51 Section 75 of the Act requires you to set deemed value rates for every stock in the QMS. This is to ensure there are appropriate incentives for fishers to acquire or maintain sufficient ACE so that fishing effort does not result in catch limits being exceeded.

52 The current deemed value rates for CDL 2 are as follows:

a) Annual deemed value rate: $0.30 per kg.

b) Interim deemed value rate: $0.15 per kg

c) Differential deemed value rates do not apply.

53 MFish considers these deemed value rates have been effective in constraining catch to the current TACC of 1,620 tonnes. Catch for the 2008/09 fishing year was 1,135 t which approximates the recommended TACC for 2010-11 of 1,020 t.

54 However, given the substantial reduction to the TACC that is being recommended for CDL2, it is important to ensure fishers have the correct incentives to limit their catch to the reduced TACC, and not report catch as being taken from an adjoining stock. Further, the deemed value rates in CDL 2 and CDL 3 are lower than those in CDL 4 and an increase in deemed values in CDL 2 and 3 would ensure rates are standardised across the three neighbouring black cardinalfish stocks (CDL 2, 3 and 4).

55 The deemed value standard recommends setting the annual deemed value rate between the ACE transaction price and the landed price for that stock. The most recent port price for CDL 2 is $0.92 per kg and the average ACE trading price is approximately $0.10 per kg. MFish considers that, given the current landed value there is justification to increase the interim and annual deemed value rates so as to ensure fishers continue to have the appropriate incentive to balance catch with ACE.

56 There are currently no differential deemed values in CDL 2. Differential deemed values would also provide an increasing economic disincentive for fishers to exceed their CDL

2 ACE allocation. To minimise any CDL 2 overcatch, MFish considers that the correct economic incentives must be used to maintain catch within the TACC regardless of which TAC option you select.

57 Consequently, MFish recommends increasing the annual and interim deemed values and implementing a single differential deemed value rate as follows:

a) Annual deemed value rate: $0.52 per kg.

b) Interim deemed value rate: $0.26 per kg

c) Differential deemed value rate: $0.60 per kg for all catch that is 20% in excess of ACE holdings.

58 Further details on the deemed values for CDL 3 and 4 can be found in the Deemed Value Advice Paper.

Compliance issues

59 MFish is satisfied that the recommended management options discussed above are unlikely to result in increased compliance risks in the fishery. Fishers have also had ample warning that this reduction is planned and should have adjusted their activities accordingly. However, continued monitoring of vessel reporting is required.

Future management

Fisheries Plan

60 MFish, in collaboration with Industry and environmental organisations, has developed a National Fisheries Plan for Deepwater and Middle-depth Fisheries that incorporates key deepwater stocks. The Plan sets out the long-term goals and objectives for deepwater fisheries. It will also set the specific operational objectives that will be delivered annually for each key deepwater species, and will establish performance indicators to assess if the management strategy has been delivered.

61 The first two fishery-specific chapters of the Plan, hoki and orange roughy, are complete and have recently been consulted on with all stakeholder groups. Black cardinalfish is included as a key bycatch in the orange roughy component on the basis that vessels targeting black cardinalfish typically also target orange roughy. Implementing the Plan may result in further work being done to refine the harvest strategy for all black cardinalfish stocks. Subject to your approval, this Plan will be operational from the start of the 2010-2011 fishing year.

The 2010 Acoustic Survey

62 As part of the three-year staged reduction, last year you directed MFish to work with Industry to investigate options for how better to monitor the status of CDL 2. This has since resulted in the Deepwater Group Ltd funding an acoustic survey for CDL 2. This survey was designed by NIWA and NIWA staff were present on the voyage and conducted subsequent analysis of the data collected.

63 Detailed knowledge possessed by the Industry regarding where and when fish were likely to be present was used in survey design. This was important as CDL 2 is a feature-based fishery with up to 15 known areas of significance for fishing and the fact that aggregations of fish are highly mobile and ephemeral (flighty).

64 The proposal was to carry out a 10-day pilot survey on an Industry vessel to collect acoustic and biological data to determine feasibility of using ongoing acoustic surveys to monitor CDL 2. Analysis of acoustic data would potentially produce estimates of

biomass of cardinalfish and specimens would be collected for target strength modelling.

65 The survey occurred between 7 and 18 March 2010 on the FV Amaltal Mariner. During this voyage Industry visited several bathymetric features where cardinalfish "hotspots" are known to have occurred in the past.

66 The survey generated an acoustic biomass estimate of 440 t which was very low compared to annual catches (average 1,230 t in each of the last three years). Surveying cardinalfish acoustically is difficult because aggregations of cardinalfish are ephemeral and can appear or disappear from features over hours or days.[37] Because the acoustic survey only "sees" those fish that are in the vicinity of the vessel at that time, an unknown proportion of CDL 2 stock is on the hotspots at any time.

67 MFish considers that the 2010 acoustic survey does not provide any useful information that could be used to support your decision on CDL 2. However, on-going work is planned to refine the survey to further test the feasibility of estimating CDL 2 biomass using acoustic methods.

Management boundaries

68 Although CDL 2, 3 and 4 probably constitute a single biological stock, CDL 2 dominates the catch from these three quota management areas and appears to contain the majority of the biomass. Over the last three years, catches from CDL 3 and 4 have been low (average 30 t) and well within their respective TACCs. CDL 2 also dominates the TACC with CDL 2 accounting for 89% of the current combined catch limits for cardinalfish in these three quota management areas.

69 Consequently, MFish recommends a TAC change for CDL 2 only at this time. In addition, CDL 2, 3 and 4 may be considered for amalgamation in 2011-12.

[37] In the six weeks following the survey, 145 t was taken from CDL 2 in 28 tows, catches for these tows ranged from 15 kg to 60,000 kg (in one 22 minute tow).

Recommendations

70 MFish recommends that, for the fishing year commencing on 1 October 2010, you:

EITHER

Option 1 (status quo): Agree to retain the TAC for CDL 2 at 1,780 tonnes and within the TAC:

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Retain an allowance of 160 tonnes for other sources of fishing-related mortality;

iii) Retain the TACC at 1,620 tonnes.

OR

Option 2 (MFish recommendation): Agree to reduce the TAC for CDL 2 from 1,780 tonnes to 1,120 tonnes and within the TAC:

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Set an allowance of 100 tonnes for other sources of fishing-related mortality;

iii) Set the TACC at 1,020 tonnes.

AND, EITHER

Agree to retain the current deemed value rates for CDL 2 as follows:

i) Annual deemed value rate: $0.30 per kg.

ii) Interim deemed value rate: $0.15 per kg

iii) Differential deemed value rates do not apply.

OR

Agree to set the deemed value rates for CDL 2 as follows **(MFish recommendation)**:

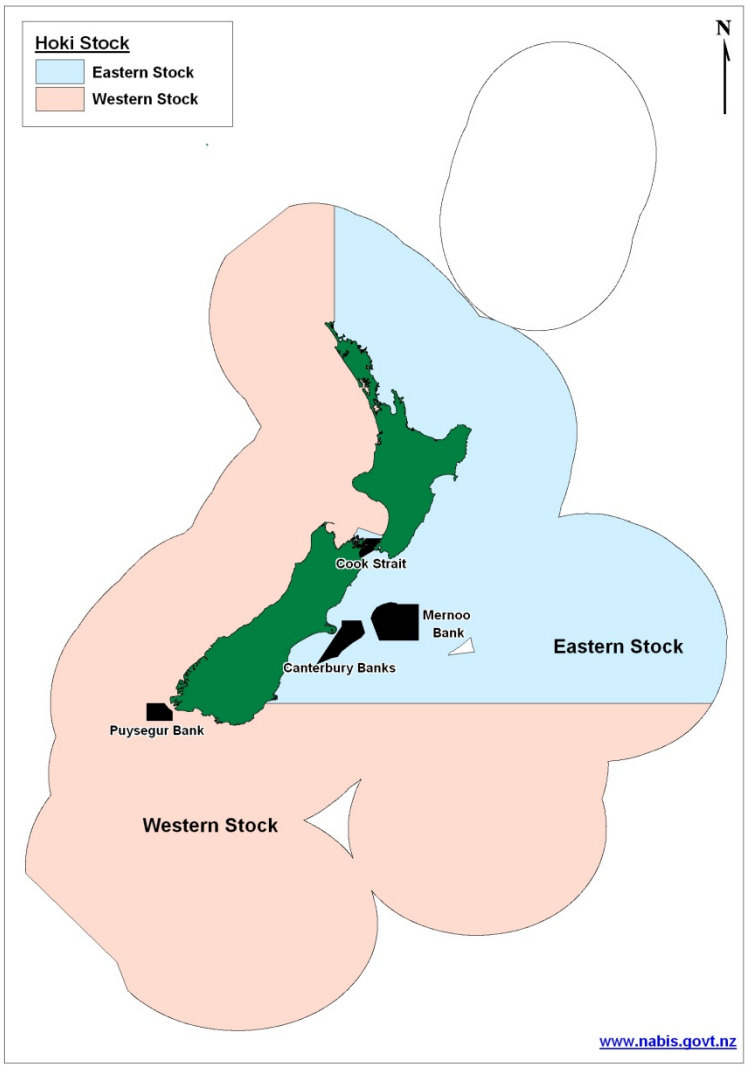
i) Increase the annual deemed value from $0.30 to $0.52 per kg;

ii) Increase the interim deemed value from $0.15 to $0.26 per kg;

iii) Set a differential deemed value of $0.60 per kg for all catch that is 20% in excess of ACE holdings.

HOKI (HOK 1)

Figure 1: Map of the hoki fishery detailing the boundaries between the eastern and western biological stocks and the hoki management areas



Executive summary

1 The hoki fishery is managed as one Quota Management System (QMS) stock, HOK1, although HOK1 is considered to be two biological stocks, an eastern stock and a western stock. The 2010 hoki stock assessment results indicate that both the western and eastern biological stocks are above the biomass that will produce the maximum sustainable yield (B_{MSY}) which is estimated to be 23-25% of the unfished biomass (B_0).

2 The 2010 stock assessment results also indicate that the stock status of both hoki stocks is at or above the management target of 35-50% B_0. Five year projections, using the 2010 stock assessment, show that both stocks are likely to remain above both B_{MSY} and above the management target range at increased catch levels. This suggests that a higher catch limit is likely to be sustainable.

3 MFish is proposing two options for your consideration:

a) Option 1: The HOK1 total allowable catch (TAC) and total allowable commercial catch (TACC) remain unchanged at 111,140 and 110,000 tonnes

respectively. Under this option the current catch split arrangement would remain in place so that 60,000 tonnes would be harvested from the eastern stock and the remaining 50,000 tonnes harvested from the western stock.

b) Option 2 (MFish recommended option): Increase the HOK1 TAC from 111,140 tonnes to 121,240 tonnes and the TACC from 110,000 tonnes to 120,000 tonnes. Under Option 2 industry will be requested to manage catches so that 60,000 tonnes (50% of the TACC) is taken from the eastern stock and 60,000 tonnes (50% of the TACC) is taken from the western stock.

4 Both options include an east/west catch split arrangement which is a non-regulatory arrangement to manage the proportion of the catch that is harvested from each biological stock. This is to avoid any sustainability risks from the entire HOK1 TAC being harvested from a single biological stock.

5 The deemed value rates for hoki have also been reviewed for the 2010-2011 fishing year. MFish recommends that, regardless of which of the two options you decide to implement, you retain the existing deemed value rates for the hoki stock at this time.

Background information

6 The hoki fishery is currently managed under the QMS as one stock, HOK1, which covers fishery management areas 1-9. The fishery consists of two distinct biological stocks, an eastern stock and a western stock. Within each stock there are the following defined fishing areas:

a) Eastern hoki stock: Cook Strait fishery, Chatham Rise fishery, East Coast South Island fishery (ECSI) and the East Coast North Island fishery (ECNI).

b) Western hoki stock: West Coast South Island fishery (WCSI), Sub-Antarctic fishery and the Puysegur fishery.

Juvenile hoki from both stocks mix on the Chatham Rise. They are thought to migrate to the eastern or western stock before spawning.

7 The main hoki fishery operates from mid-July to late August on the WCSI where hoki aggregate to spawn. A second major spawning fishery occurs in Cook Strait where the season runs from late June to mid-September peaking in July and August. Small catches of spawning hoki are taken from other spawning grounds off ECSI and, late in the season, at Puysegur Bank. Outside the spawning season there is a substantial fishery on the Chatham Rise and a smaller fishery in the Sub-Antarctic. There is also a small ECNI hoki fishery.

8 In 2001 industry implemented a catch split arrangement to manage fishing effort across the two biological stocks by setting individual catch limits for each stock. The catch limits set under this split arrangement vary depending on the status of each stock; since 1 October 2009 it has been set so that 60,000 tonnes of the TACC are taken from the eastern stock and 50,000 tonnes from the western stock.

9 To protect juvenile hoki, industry has also implemented a range of measures known as the Hoki Operating Procedure (HOP). These measures include closing four areas to hoki targeting which are believed to contain large numbers of juvenile hoki. These areas, known as hoki management areas (HMAs) are still accessible to vessels targeting other species such as scampi, ling and squid. The four closed areas are (see Figure 1):

a) Cook Strait
b) Canterbury Banks
c) Mernoo Bank
d) Puysegur.

10 This HOP was reviewed for the start of the 2009-2010 fishing year. In addition to tightening up reporting processes around fishing activity in the HMAs, the revised HOP also recommends that vessels move away from fishing areas if more than 20% of their catch consists of small hoki. MFish also monitors fishing activity within these HMAs.

Consultation

11 Your decision to adjust the TAC for HOK1 is a decision under section 13 of the Fisheries Act 1996 and therefore the consultation requirements of section 12 and section 21(2) apply. Consultation on the initial position paper (IPP) was undertaken with such persons or organisations representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Maori, environmental, commercial and recreational interests.

12 MFish followed its standard consultation process for IPPs; this involved posting all IPPs on MFish's website and alerting stakeholders to this through a letter sent to approximately 350 companies, organisations and individuals.

13 MFish consulted on the two options that are set out in Table 1.

Table 1: Summary of management options proposed for the HOK1 fishery

	Option 1 (status quo)	Option 2 (recommended option)
TAC	111,140 t	121,240 t
Customary Maori allowance	i) 20 t	ii) 20 t
iii) Recreational allowance	iv) 20 t	v) 20 t
vi) Other sources of fishing-related mortality (1% of TACC)	vii) 1,100 t	viii) 1,200 t
ix) TACC	x) 110,000 t	xi) 120,000 t

Submissions received

14 Submissions were received from the following:

a) Greenpeace Aotearoa New Zealand (Greenpeace)
b) Royal Forest & Bird Protection Society (Forest & Bird)
c) Environment and Conservation Organisations of NZ Inc (ECO)
d) WWF – New Zealand (WWF)
e) Sanford Limited (Sanford)
f) New Zealand Seafood Industry Council Ltd (SeaFIC)
g) The DeepWater Group Ltd (DWG)
h) Talley's Group Ltd (Talley's)
i) Hokotehi Moriori Trust
j) Mark Clayson

All submissions are attached as Volume Two to this paper for your reference.

Submissions on catch limit

15 Greenpeace, Forest & Bird, WWF and ECO do not support an increase to the hoki TAC for the following reasons:

a) A substantial volume of juvenile hoki continues to be recorded from both commercial catch and the trawl surveys. Environmental stakeholders submit that fishing too many juvenile hoki can impact on future stock sustainability.

b) An increase to the hoki catch limit will result in an increase in bottom trawling activity which they do not support.

c) The Chatham Rise trawl survey index has showed a decline in recent years which could be an indicator of problems with the hoki stock.

16 All four parties also submit that the catch split arrangement should be regulated and that it is inappropriate for such an important management measure to be based on a voluntary agreement.

17 Forest & Bird and Greenpeace also raised concerns that the forward projection data indicates that the hoki stock would decline over the long-term if the TAC was increased.

18 Mr. Clayson submitted that he did not agree to the increase of any TAC or TACC for any stock for the near future. In support of this view Mr. Clayson stated that fish numbers were decreasing in the New Zealand Exclusive Economic Zone (EEZ).

19 DWG, on behalf of thirteen quota holding companies (including Sealord, Ngai Tahu and Aotearoa Fisheries Ltd), supports Option 2 to increase the hoki TACC by 10,000 tonnes. The DWG also reiterated hoki quota owners' commitment to managing hoki catches within the east/west catch split.

20 Both Talley's and Hokotehi also provided submissions in full support of the proposed

increases. Further, Talley's noted that over the last 12 month period their vessels have recorded the highest catch per unit of effort (CPUE) rate in 20 years.

21 SeaFIC submits that the science information supports the proposal to increase the hoki TACC.

22 The only quota owning company not in favour of an increase at this time is Sanford. It provided a separate submission and stated that retaining the status quo will provide greater certainty that the hoki fishery is being well managed and that the long-term sustainability of the stock will be maintained. In contrast to the submissions received from environmental groups, Sanford report that their skippers have seen an increase in the size of fish harvested from the WCSI fishery. Sanford's preference is to postpone any further increases until the results of the 2010-2011 trawl surveys are available so that it is possible to fully assess the impact of last year's increase on the western stock and on the state of the hoki stock as a whole.

Submissions on deemed values

23 SeaFIC agreed that the deemed value rates for HOK1 appear to be effective and they support retaining the existing deemed value regime as proposed in the IPP. No other submitters commented on deemed values.

Rationale for management intervention

24 The 2010 stock assessment estimates that the current status of the combined hoki stock is 45 – 54% B_0; with the western stock at 40-52% B_0 and the eastern stock at 51-57% B_0. B_0 refers to the biomass that would have existed in the absence of fishing. These results indicate that both stocks are above B_{MSY} (which is 23-25% B_0). The eastern stock is currently above the management target of 35 – 50% B_0 while the western stock is at the upper end of the management target. This management target range of 35 – 50% B_0 has been set for HOK1 as part of the application of the Harvest Strategy Standard (HSS). The HSS requires that a stock is managed to at least B_{MSY} but a fishery can be managed to a target above B_{MSY}

25 Until 2008 the western stock had been declining largely due to an extended period of poor recruitment. Improved recruitment, supported by a cautious management regime in recent years, has meant that the western stock has rebuilt and the stock was able to sustain a catch increase at the start of the 2009-2010 fishing year. In contrast the eastern stock has remained above target levels throughout the history of the fishery.

26 Stock assessment model projections indicate that the biomass for both the western and eastern stock will remain above the management target range even with a proposed TAC increase. This indicates there are potential utilisation opportunities available and a TAC increase could be considered.

Management measures proposed

27 Given the current status of HOK1 MFish is recommending that you increase the hoki TAC by 10,100 tonnes for the 2010-2011 fishing year (Option 2). This increase would be allocated to the western stock so as to protect juvenile hoki that are predominantly found in the eastern stock on the Chatham Rise. The option to retain the TAC and TACC at current levels is also available for your consideration (Option 1).

28 The hoki harvest strategy requires that both hoki stocks are managed to within a target range of 35 – 50% B_0. This management target is set above B_{MSY}. Managing the fishery so that it fluctuates round this target will provide greater certainty that the hoki fishery remains at or above B_{MSY} and that the long-term sustainability of the stock is

assured.

29 Table 2 summarises the proposed management options based on five year catch projections using the more cautious 'recent recruitment' assumption. This recruitment assumption takes into account the years of poor recruitment seen in the western hoki stock from 1995-2001. Both options proposed will maintain the combined hoki stock above the management target although retaining the TAC at 111,140 tonnes (Option 1) provides greater certainty that this will be achieved. These options are also described in more detail below.

30 MFish can confirm that the intention is not to manage the HOK1 stock to a level above the management target as the target is already set at a precautionary level and managing above this would likely limit utilisation opportunities. However, any increase to the hoki catch limit must also be considered within the wider economic context. This includes ensuring that harvesting capacity is in line with available catch limits.

Table 2: Summary of estimated stock status for HOK1 and for the eastern and western stocks for each management option based on recent recruitment, after a 5yr period (2015).

Management option	TAC	TACC	Eastern stock catch limit	Western stock catch limit	HOK1 stock biomass in 2015 (% Bo)	Eastern stock biomass in 2015 (% Bo)	Western stock biomass in 2015 (% Bo)
Option 1	111,140	110,000	60,000	50,000	55 - 57% B_o	53 - 54% B_o	55- 59% B_o
Option 2	121,240	120,000	60,000	60,000	54% B_o	52 - 54% B_o	53-55% B_o

Option 1

31 Under this option the TAC would remain at 111,140 tonnes and the TACC would remain at 110,000 tonnes. The current catch split arrangement would remain unchanged. Under this option both the eastern and western stock are highly likely to be above B_{MSY} and above the management target range at the end of the 5 year projection period. While this option is undoubtedly more cautious it may result in lost utilisation opportunities as both hoki stocks combined are likely to be able to support a harvest level greater than 110,000 tonnes.

Option 2

32 If you select Option 2 the TAC would be increased to 121,240 tonnes and the TACC would be increased by 10,000 tonnes to 120,000 tonnes. In addition it is proposed that the east/west catch split arrangement would be adjusted so that equal quantities of the TACC (60,000 tonnes) are taken from both the eastern and western stocks.

33 The five year management projections indicate that setting the TAC and TACC based on the higher catches of Option 2 will ensure both stocks remain above B_{MSY} (see Table 2 above). This option permits a further increase in catch from the western stock; this is in addition to the catch increase implemented from 1 October 2009 when the catch limit on the western stock was increased from 30,000 tonnes to 50,000 tonnes. MFish notes that the impact of this previous increase has yet to be observed but can confirm that the projections have been made with the assumption that any increase in catch is taken from the western stock.

34 As noted Forest & Bird and Greenpeace raised concerns that the forward projection data indicate that the hoki stock would decline over the long-term if the TAC was increased. MFish can confirm that the 5-year projections (on which the management recommendations are based) show that even with the proposed increase in the TAC

the stock will increase over the next five year period to 2015. Furthermore, as the stock is above the management target level (35-50% Bo), and is expected to remain so over the next five years, higher utlisation may also be possible in the longer term. This could result in some decline in the hoki biomass but given the current status of both the stocks they would still remain within the agreed target range.

35 MFish also acknowledges concerns from environmental stakeholders (eNGOs) regarding the fact that the catch composition of juvenile hoki (<65cm) has remained high in some areas of the hoki fishery (especially the Chatham Rise non-spawning fishery). Catches of small hoki remain an area of concern as high catches of small fish may affect the future recruitment of both stocks. However, MFish considers it unlikely that the proposed increase to the catch limit under Option 2 would significantly increase catches of juvenile hoki. This is because the increased catch would be taken from the WCSI fishery rather than the Chatham Rise fishery where juvenile hoki are more prevalent.

36 The eNGOs also raised concerns regarding the perceived decline in the biomass index collected as part of the Chatham Rise trawl survey. MFish notes that while the 2010 survey estimate was lower than that in 2009 the abundance series shows an increasing trend. Further, the stock assessment includes the data from the most recent survey and therefore future projections of the stock include the impact of the reduced biomass in 2010.

37 Option 2 also provides for greater utilisation opportunities in the fishery. Hoki is one of the most important export fisheries. In 2009 it contributed $152m to the NZ economy in export revenues and increasing the catch limit will result in a corresponding increase in export revenues. Based on the current export price the increase could be in the order of $16m.[38]

Integrity of the catch split arrangement

38 MFish is aware that there have been concerns about the integrity of the catch split arrangement as a valid management tool, particularly since the catch split arrangement has not been adhered to in recent years.

39 MFish is satisfied that the breaches in the catch split arrangement observed in the 2007-08 and 2008-09 fishing years, when the western stock allocation was exceeded by almost 5,000 tonnes, reflected the challenges faced by operators in restructuring their fishing operations in response to the reduction in fishing effort permitted on the western stock. MFish fully expects that the increased fishing effort available on the western stock following the TACC increase in October 2009 will address these issues and that the integrity of the catch arrangements will be preserved during the 2010-2011 fishing year.

40 MFish can also confirm that industry, with MFish support, has implemented new processes around monitoring adherence to the catch split arrangement. Under this new process FishServe manages and reports on the split arrangement. In summary all ACE generated at the start of the fishing year has been split into either HOK1E ACE (hoki that can be harvested from the eastern stock) or HOK1W ACE (hoki that can be harvested from the western stock) and catch against this ACE is then reported. This means that in-season monitoring of performance against the catch split arrangement can be conducted.

[38] This is based on the average greenweight export price for hoki in the 2009 export statistics of $1.61 per kg. Precise figures are difficult to estimate and will be influenced by factors such as commodity prices, exchange rates and exported state.

41 Adherence to the catch split arrangement is verified on a quarterly basis. The auditing and verification process is carried out by FishServe and the information is provided to both the DWG and MFish for review. MFish acknowledges that it is too early to assess the performance of the arrangement in the current fishing year but preliminary information from FishServe indicates that the catch split requirements are being adhered to.

42 DWG and Sanford both confirmed industry's intention to adhere to the catch split arrangement for the 2010-2011fishing year. DWG also confirmed that they would continue to contract FishServe to administer the catch split on their behalf and to provide MFish with quarterly reports detailing fisher performance.

Assessment of management measures

43 This section describes the two management options available for your consideration in terms of how they will ensure that your relevant statutory obligations are met.

44 MFish considers that all options presented in this paper satisfy your obligations under section 8 of the Act in that they provide for utilisation in the hoki fishery while ensuring sustainability. Each management option proposed will ensure the long term sustainability of the stock. Option 1 is more cautious but is likely to limit utilisation opportunities. In contrast, increasing the TACC to 120,000 tonnes under Option 2 (MFish recommended option), will allow for increased utilisation.

Setting the TAC – section 13

45 Section 13 of the Act requires you to set a total allowable catch (TAC) limit that:

a) Maintains the stock at or above a level that can produce a maximum sustainable yield, having regard to the interdependence of stocks (13(2)(a));

b) Enables the level of a stock whose current level is below that which can produce the maximum sustainable yield to be altered (13(2)(b))

1) In a way and at a rate that will result in the stock being restored to at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and

2) Within a period appropriate to the stock having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or

c) Enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks (13(2)(c)).

46 Under section 13 you are required to set a TAC for the entire hoki stock as a single unit of management (i.e. the combination of the eastern and western biological stocks). MFish considers that you should set a TAC under 13(2)(c) given that the hoki is assessed to be above a level that can produce the maximum sustainable yield.

47 Section 13(2)(c) allows you to set a TAC that will allow the stock to move towards or above a level that can produce the maximum sustainable yield when the stock level is estimated to be already above B_{MSY}. You are permitted to choose the 'way and rate'

that the stock is moved towards the desired level but must have regard to the interdependence of stocks. There is no statutory guidance on what an appropriate 'way and rate' might be in any given case – it is a matter for you to determine having regard to social, cultural and economic factors.

48 MFish considers that given the information presented above, the obligations under s 13(2)(c) have been met and that increasing the TAC from 111,140 to 121,240 would ensure the stock remains at a level that can produce the maximum sustainable yield.

Environmental considerations

49 The Act requires that when any effect of fishing is adverse this effect should be avoided, remedied or mitigated. More specifically, sections 9(a) and (b) require you to take into account that associated or dependent species be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

50 Key environmental issues associated with the HOK1 fishery and how they will be affected by an increase to the TAC are discussed below:

Seabirds

51 The hoki trawl fishery is known to interact with a range of protected seabird species; in 2007-08 approximately 147 seabird captures were recorded from the hoki fishery. However, MFish is satisfied that existing regulatory and non-regulatory measures to reduce incidental interactions with seabirds will ensure that any increase in fishing effort does not have an adverse effect on seabird populations.

52 Existing mandatory mitigation measures include the requirement that all trawlers deploy bird mitigation devices when fishing gear is in use. In addition, non-regulatory measures include vessel-specific measures known as vessel management plans (VMPs), which set out the onboard practices that vessels must follow to avoid seabird interactions, including offal management and good factory cleanliness. MFish currently monitors individual vessel performance against VMPs and works in collaboration with the DWG to rectify any issues that arise during the fishing season. This practice will continue during the 2010-2011 fishing year.

Fish bycatch

53 The main commercial bycatch species in the hoki target fishery are hake (HAK), ling (LIN) and silver warehou (SWA). Option 2 proposes an increase to the hoki TAC and an increase in fishing effort on the western stock.

54 You increased the LIN7 TACC at the start of the 2009-2010 fishing year as the LIN7 fishery is able to support higher catches. Bycatch rates of LIN7 are low in the hoki fishery such that the LIN7 TACC should not be exceeded by the target fishery for hoki. MFish will monitor LIN7 catches during the 2010-2011 fishing year and will consider further management measures if the LIN7 TACC is exceeded.

55 The silver warehou TACC from this area (SWA1) continues to be under caught so any increase in SWA1 bycatch as a result of increased hoki fishing effort should be absorbed within the existing SWA1 TACC.

56 There is the potential for the HAK7 TACC to be over-caught as a result of increased fishing effort on the western hoki stock. MFish will monitor fishing activity during the 2010-2011 fishing year and if over-catch is identified as an issue then further management measures will be considered. However, HAK7 has been under caught in

recent years and any increase in bycatch may be absorbed within the existing TACC. MFish can also confirm that the HAK7 deemed value rates were increased for the start of the 2009-2010 fishing year.

57 For the reasons described above MFish is satisfied that should you choose to increase the hoki TAC and TACC under Option 2 it is unlikely to have an impact on the sustainability of the species and stocks caught as a bycatch in this fishery.

Marine mammals

58 The hoki fishery is responsible for some fur seal mortalities particularly in the WCSI fishery. During 2007-08 the estimated fur seal mortality across the entire hoki fishery was 327 fur seals. Since Option 2 would result in an increase in fishing effort in the WCSI fishery there is the potential for increased fur seal interactions.

59 At present, information on the size of the fur seal population that inhabits the WCSI is scarce so it is not possible to assess the likely impact from the management options proposed. DWG in collaboration with MFish and the Department of Conservation recently undertook a study to estimate the size and extent of the fur seal population in this area. The initial results of this study indicate that fishing activity is unlikely to be having an adverse effect on the fur seal population. MFish also notes that the fur seal population is believed to be increasing around the coast of New Zealand although there is currently no information available to indicate that such an increase is occurring on the WCSI.

60 DWG has also developed an operational procedure for mitigating marine mammal bycatch which will apply to all hoki trawlers >28m; the marine mammal operating procedure (MMOP). The MMOP sets out the measures that hoki vessels should follow to limit fur seal interactions. As with the VMPs for seabirds, MFish also audits and monitors vessel performance against the MMOP.

Benthic Interactions

61 Although hoki is a mid-water species, in the Chatham Rise fishery it is generally caught by bottom trawl. The coral bycatch associated with this fishing activity is small and typically amounts to less than 400 kilograms per year.

62 In recent years the management measures to address the effects of deepwater trawl activity have focused on ‘avoiding’ these effects. This has been achieved though closing areas to bottom trawling; first with seamount closures in 2001 and then with Benthic Protection Areas (BPAs). The implementation of BPAs in 2007 closed over 30% of the New Zealand EEZ to bottom trawling. It also implemented a monitoring regime to ensure these closures are adhered to.

63 If you choose to increase the TAC under Option 2 this will result in an increase in fishing effort but all of this effort will likely be focused on the WCSI spawn fishery. The risk of increased benthic interaction is less in this fishery as most of the fishing activity is carried out using mid-water gear which has little contact with the seabed.

64 The submissions received from the four environmental groups all raised concerns with the level of bottom trawling activity in the hoki fishery. They do not support the view that the BPA initiative provides sufficient protection to the benthic habitat and submit that until measures are in place to deliver sufficient benthic protection the hoki TACC should not be increased. MFish is satisfied that, for the reasons described above, the proposed increase to the hoki TACC is unlikely to result in any adverse effects on the benthic habitat.

Section 11 considerations

65 In making your decision on sustainability measures for HOK1 you must also have regard to the requirements of section 11 of the Act as follows:

a) Section 11(1)(a): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any effects of fishing on any stock and the aquatic environment. No information about any effects of fishing on any stock or on the aquatic environment, additional to that discussed elsewhere in this paper, is considered relevant to the review of sustainability measures for HOK1 at this time.

b) Section 11(1)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC, an allowance for incidental fishing-related mortality and, a general restriction on vessels greater than 46m fishing within 25nm of the coastline in the WCSI fishery. No other controls under the Act specifically apply to the HOK1 stock.

c) Section 11(1)(c): Before setting or varying any sustainability measure for this stock, you must take into account the natural variability of the stock. This has been discussed previously.

d) Sections 11(2)(a) and (b): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and you consider relevant. MFish is not aware of any such policy statements, plans or strategies that should be taken into account for the HOK1 stock.

e) Section 11(2)(c): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and you consider relevant. The boundaries of the quota management area for this stock do not intersect with the Park boundaries. However, the hoki quota management area encompasses the waters of the Hauraki Gulf Marine Park. The distribution of hoki and its fishery does not intersect with the park boundaries; therefore, MFish considers there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2A)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take account of any relevant and approved fisheries plans. There is no approved fisheries plan in place for any deepwater stock at this time but the implementation of a deepwater fisheries plan is discussed in a later section.

g) Sections 11(2A)(a) and (c): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any conservation or fisheries services, or any decision not to require such services. MFish does not consider that existing or proposed services materially affect the proposals for this stock. No decision has been made to not require a service in this fishery at this time.

Allocating the TAC

66 The TAC must be apportioned between the relevant sectors and interests as required under sections 20 and 21 of the Act. Section 21 prescribes that you shall make allowances for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

67 Recreational and customary fishers do not target hoki as it is predominantly an offshore fishery and the data on actual customary and recreational catches of hoki in recent years is negligible. However, there are references to customary catches of hoki occurring in the past. MFish also considers it likely a small amount of hoki is caught by recreational fishers while fishing for other middle-depth species. An allowance of 20 tonnes each for recreational and customary fishers is currently provided for and MFish recommends that you retain these allowances regardless of whether you choose to retain the existing TAC or increase it under Option 2.

68 MFish recommends that you set a nominal allowance for other sources of fishing-related mortality of 1% of the TACC which would be 1,200 tonnes under Option 2. This allowance is required to take account of hoki mortality that is not reported such as hoki lost due to burst nets or dumping of damaged hoki.

69 Based on the proposed TAC and allowances outlined above, MFish recommends you set a TACC of 120,000 tonnes under Option 2. If you choose to retain the status quo (Option 1) the TACC will remain at 110,000 tonnes.

Deemed values

70 Section 75 of the Act requires that you set deemed value rates for every stock in the QMS. This is to ensure there are appropriate incentives for fishers to acquire or maintain sufficient ACE so that fishing effort does not result in catch limits being exceeded.

71 The current deemed value rates were revised in 2007 and are set as follows:

a) Annual deemed value rate set at $0.90 per kg

b) Interim deemed value rate set at $0.45 per kg

c) Differential deemed value rates apply at 102% of catch in excess of ACE at a rate of $1.30 per kg

72 MFish considers these deemed value rates have been effective in constraining fishing effort to the TACC (although recognising that information on catch levels against the current TACC of 110,000 is not yet available). Despite recent increases in the hoki ACE trading prices the current annual deemed value rate is still set between the ACE trading price and the port price for the stock, as guided by the Deemed Value Standard. The high differential deemed value rate also provides an appropriate incentive to limit catch to the TACC. MFish is satisfied that under both management options available for your consideration the deemed value rates are set at an appropriate level to limit catch to the TACC.

73 Fishing activity will be monitored during the 2010-2011 fishing year and if there is evidence that fishers are either fishing in excess of the TACC or fishing in excess of their individual ACE holdings then the deemed value rates will be reviewed for the 2011-2012 fishing year.

Compliance issues

74 MFish believes there may be some compliance risks with the proposed increase under Option 2 as this will result in additional fishing effort on the western stock and particularly in the WCSI spawning fishery. There is a risk that this increased fishing effort may create an incentive for operators fishing the WCSI fishery to dump bycatch species where there is a constraining TACC and insufficient available ACE to balance catch. However the risk to species such as hake, ling and silver warehou is likely to be limited for the reasons discussed earlier.

75 The potential also exists for highgrading of hoki, where smaller fish are illegally dumped in favour of more valuable larger specimens. Larger factory vessels operating in the WCSI may also attempt to conceal bycatch or lower value hoki through mealing. These risks will remain regardless of the option chosen by you and support the continued monitoring and surveillance of vessel activity.

Future management

76 MFish in collaboration with industry and environmental organisations has developed and recently consulted on the National Fisheries Plan for Deepwater and Middle-depth fisheries (National Deepwater Plan). This plan includes a fishery specific chapter for hoki which describes the objectives that will guide the management of the hoki fishery over the next 5 years. MFish expects to provide you with the National Deepwater Plan for your approval shortly, with the intention that it will be in place by 1 October 2010.

Recommendations

77 MFish recommends that, for the fishing year commencing on 1 October 2010, you agree to either:

Option 1 (Status Quo)

Retain the existing TAC for HOK1 at 111,140 and within the TAC:

i) Retain allowances for customary Maori and recreational fishing interests of 20 tonnes apiece;

ii) Retain an allowance of 1,100 tonnes for other sources of fishing-related mortality;

iii) Retain the TACC at 110,000 tonnes.

AND

i) Retain the existing deemed value rates

OR

Option 2 (MFish Recommended Option)

Increase the TAC for HOK1 from 111,140 tonnes to 121,240 tonnes and within the TAC:

i) Retain allowances for customary Maori and recreational fishing interests of 20 tonnes apiece;

ii) Set an allowance of 1,200 tonnes for other sources of fishing-related mortality;

iii) Set the TACC at 120,000 tonnes.

AND

i) Retain the existing deemed value rates

ORANGE ROUGHY (ORH 3B)

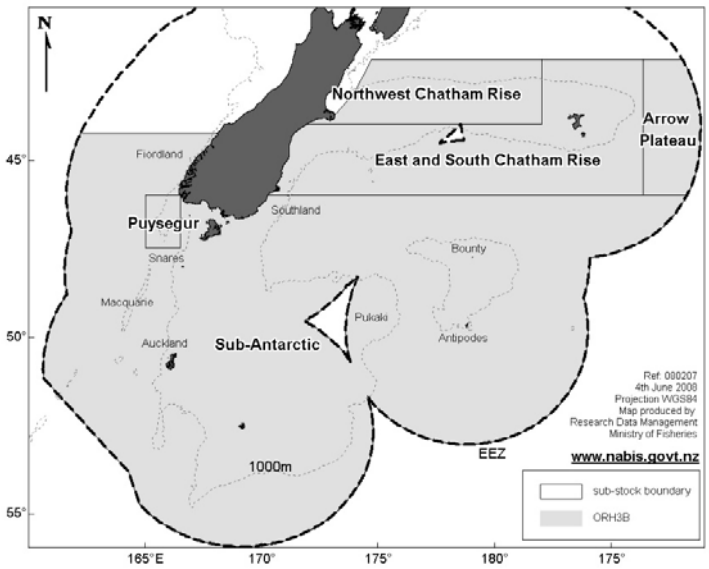


Figure 1: Quota Management Area (QMA) and sub-stock boundaries for ORH 3B

Executive summary

1 ORH 3B is a wide-ranging and spatially-complex fishery that comprises five individual sub-stocks (Figure 1). For each of these sub-stocks, voluntary sub-Quota Management Area catch limits are agreed to by the Deepwater Group Ltd (DWG) which represents 96.1% of the ORH 3B quota owners.

2 Based on the best available information the ORH 3B stock is very likely to be below the biomass that can support the maximum sustainable yield (B_{MSY}) and likely to be below the soft limit as described in the Harvest Strategy Standard. The East and South Chatham Rise fishery, which has provided about 70% of the catch taken in ORH 3B, has been the primary focus of ORH 3B management in recent years.

3 In 2008, the previous Minister of Fisheries approved the introduction of a new harvest strategy for the East and South Chatham Rise fishery. The previous Minister considered that the harvest strategy should be implemented over a three-year period, with each year requiring a reduction in the total allowable catch (TAC). Consequently, the then Minister reduced the ORH 3B TAC for the 2008-09 fishing year and you continued the implementation of this strategy by reducing the TAC for the 2009-10 fishing. These two TAC reductions formed the first two stages of the three-year phased reduction. MFish recommends reducing the TAC for the 2010-11 fishing year by 42% from 8,350 t to 4,840 t as the third reduction to fully implement the harvest strategy.

4 There is no known customary Maori or recreational take of orange roughy and it is recommended that zero allowances for these sectors be retained. An allowance of 5% of the total allowable commercial catch (TACC) is recommended for other mortality to the stock caused by fishing.

5 MFish also recommends increasing deemed value rates to ensure fishers have the appropriate incentive to limit catches to the reduced TACC. The annual deemed value rate would increase from $4.00 to $5.00, the interim from $2.00 to $2.50 and the differential rate from $5.00 to $6.25 for catch in excess of 110% of ACE holdings.

Background

6 ORH 3B is a complex fishery as it comprises five individual sub-stocks and, within an overall TAC, each sub-stock is managed using a voluntary sub-Quota Management Area catch limit. These catch limits are agreed to by the DWG and managed and monitored by DWG and MFish.

7 MFish recommends setting the TAC for ORH 3B at 4,840 t for the 2010-11 fishing year. This would be a reduction of 3,510 t or 42% (i.e. from 8,350 t to 4,840 t). Within the TAC, allowances and the TACC would be set as follows:

a) Retain nil allowances for customary Maori and recreational fishing interests;

b) Set an allowance of 230 t for other sources of fishing-related mortality;

c) Set the TACC for ORH 3B at 4,610 t.

8 As part of managing the ORH 3B fishery, by way of other management measures, MFish would request that Industry implement the following sub-stock catch limits within the TACC (Table 1):

a) The catch limit for the East and South Chatham Rise sub-stock would be set at 2,960 t (a reduction of 2,140 t or 42%);

b) The Industry research survey allowance for the East and South Chatham Rise sub-stock would remain unchanged at 250 t in addition to the sub-stock catch limit;

c) The catch limit for the Sub-Antarctic sub-stock would be set at 500 t (a reduction of 1,350 t or 73%);

d) The catch limit for the Puysegur sub-stock would increase from 0 t to 150 t specifically to allow the status of the stock to be monitored.

9 MFish consulted on the two options that are set out in Table 1.

Table 1: Summary of management options proposed in the IPP for the ORH 3B fishery

ORH 3B Sub-stocks	Option 1 (status quo)	Option 2 (MFish recommended option)
TAC	**8,350**	**4,840**
Northwest Chatham Rise	750	750
East and South Chatham Rise	5,100	2,960
Puysegur	0	150
Sub-Antarctic	1,850	500
East and South Chatham Rise research allowance	250	250
Other sources of fishing-related mortality (5% of TACC)	400	230
TACC	7,950	4,610

Consultation

10 Your decision on adjusting the TAC for ORH 3B is a decision under section 13 of the Fisheries Act 1996 (the Act) and therefore the consultation requirements of section 12 apply. Further, in respect of your decision on adjusting the TACC for ORH 3B, the consultation requirements set out in section 21(2) apply.

11 Consultation on the Initial Position Paper (IPP) was undertaken with such persons or organisations representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Maori, environmental, commercial and recreational interests.

12 MFish followed its standard consultation process for IPPs in the October 2010 sustainability round. This involved posting all IPPs on MFish's website and alerting stakeholders to this through a letter sent to approximately 350 companies, organisations and individuals.

Submissions received

13 Submissions were received from the following:

a) Greenpeace Aotearoa New Zealand (Greenpeace)

b) Royal Forest & Bird Protection Society (Forest & Bird)

c) WWF – New Zealand (WWF)

d) Environment and Conservation Organisations of NZ Inc (ECO)

e) The Deepwater Group Ltd (DWG)

f) Sanford Limited (Sanford)

g) New Zealand Seafood Industry Council Ltd (SeaFIC)

h) Mr Mark Clayson

i) Hokotehi Moriori Trust

All submissions are attached as Volume Two to this paper for your reference.

Submissions on catch limits

14 Greenpeace submitted that the ORH 3B fishery should be closed. Greenpeace suggested that the decline in spawning biomass of the East and South Chatham Rise sub-stock, and decline in catch rates from the Sub-Antarctic sub-stock, are clear warning signs that the fishery is in serious trouble. Greenpeace also submitted that the Northwest Chatham Rise sub-stock should be closed and that no fishing of the Puysegur sub-stock should be allowed.

15 Forest & Bird submitted that the TAC for ORH 3B should be "close to zero". Forest & Bird submitted that the East and South Chatham Rise sub-stock had declined by about the same amount as recent catch and suggested that this was evidence that there had been no recruitment into the stock and no rebuild.

16 WWF submitted that the ORH 3B fishery should be closed. WWF was also of the view that modelling should have been conducted to demonstrate that the proposed TAC would rebuild the ORH 3B stock at the rate required by the Harvest Strategy Standard.

17 ECO submitted that the TAC should be reduced to 220 t. This would be made up primarily of 100 t research allowances for both the East and South Chatham Rise and the Sub-Antarctic.

18 Members of the DWG represent 96.1% of the quota shares in ORH 3B. The DWG submitted that 100% of quota owners supported the decrease in the ORH 3B TAC. However, they advised that their support for the reduction of the TAC for the East and South Chatham Rise fishery was based on them honouring their agreement with successive Ministers to a three-year phased introduction of the harvest strategy. While the DWG submitted that the three catch reductions since 2008-09 were required to ensure the long-term sustainability and rebuilding of the stock, they sought further discussion with MFish before application of the harvest strategy in the future.

19 The DWG also expressed their support for the following management measures:

a) reducing the catch limit for the Sub-Antarctic sub-stock from 1,850 t to 500 t

b) establishing a 150 t catch limit for the Puysegur sub-stock to enable abundance to be assessed

c) implementing non-regulatory measures to "rest" parts of the Northwest Chatham Rise sub-stock

20 Sanford owns over 34% of ORH 3B quota and is also a member of the DWG. Sanford elected to provide a separate submission supporting the reductions proposed. Sanford stated that they would continue to honour its previous commitment to the three-year phased reduction but expressed some reservation about the size and speed of the recent reductions.

21 Sanford and the DWG re-iterated their commitment to the non-regulatory catch-spreading arrangements and monthly reporting that has been in place in recent years across the ORH 3B fishery.

22 SeaFIC submitted that the staged reduction of the TAC is a pragmatic response to difficulties with stock assessment models for the East and South Chatham Rise fishery. SeaFIC stated that they would have liked to see more detail about the timeframe over which the stock is likely to rebuild and anticipate the setting of firmer rebuild objectives. SeaFIC considered that further development and evaluation of the harvest strategy will be required.

23 Mr Clayson submitted that he did not agree to the increase of any TAC or TACC for any stock for the near future. In support of this view Mr Clayson stated that fish numbers were decreasing in the New Zealand Exclusive Economic Zone (EEZ).

24 Hokotehi Moriori Trust submitted that the ORH3B fishery is a vital component of Moriori's Settlement quota and wished the economic impacts of the proposed reduction to be carefully considered. The Trust submitted that a 20% cut, rather than the 40% proposed, would be preferable in order to cushion the economic impact on Moriori.

Submissions on deemed values

25 SeaFIC submitted that the proposed increase to deemed value rates was excessive given the recent reduction in the port price. SeaFIC considered that excessive deemed values may provide an incentive to discard catch or not to report accurately.

26 No other submissions were received on the deemed value proposals but MFish notes that no submissions against the proposed increase in deemed value rates were received from owners of ORH 3B quota.

Rationale for management intervention

27 This section describes the information that was used to support the management options provided in this paper.

28 The ORH 3B fishery is spatially complex and comprises several biological stocks. The status of the sub-stocks is evaluated independently, with the results compiled to determine the status of ORH 3B as a whole. Based on the best available information, the ORH 3B stock as a whole has been declining and is very likely to be below B_{MSY}, and is likely to be below the soft limit of 20% B_0 (the point at which management measures should focus on arresting stock decline and facilitating a rebuild). The current information upon which to base management action is discussed for the following sub-stocks:

a) East and South Chatham Rise
b) Northwest Chatham Rise
c) Sub-Antarctic and Puysegur

East and South Chatham Rise

29 The 2010 Plenary report concluded that the East and South Chatham Rise sub-stock was very likely to be below the management target (B_{MSY}) of 30% B_0, and therefore needed to be rebuilt. The Plenary considered that the stock was also likely to be below the soft limit of 20% B_0. This assessment was made based on the most recent acoustic survey of the main spawning area of the East and South Chatham Rise sub-stock. An important component of the management approach adopted for the East and South Chatham Rise fishery is an estimate of spawning biomass.

Estimating Spawning Biomass (B_{spawn})

30 Spawning is known to occur primarily in an area to the north of the Chatham Islands (referred to as the Spawning Box) with additional smaller spawning aggregations forming in other localities across the East and South Chatham Rise. An acoustic survey of the spawning Plume in the Spawning Box (the Plume) has been undertaken annually in recent years on this part of the Chatham Rise. The most recent estimate of spawning biomass in the Plume is 28,199 t for 2009. This estimate continues the recent declining trend in the Plume biomass as the two previous estimates were 31,668 t in 2008 and 34,427 t in 2007 (Figure 2).[39]

31 In addition to the Plume biomass, spawning is known to occur on other areas of the East and South Chatham Rise (the Northeast Flats, the Northeast Hills, Mt Muck, the Andes complex and the South Chatham Rise). Estimates of spawning biomass from these areas have been derived from existing survey data. These data have been collected sporadically and the estimates are less well defined at this time. No new estimates of spawning biomass are available in the areas outside the Plume and the most recent estimates from 2007 are shown in Table 2.

[39] All estimates have been recalculated this year to, among other things, apply weather corrections and correct previous errors. Details can be found in the Plenary.

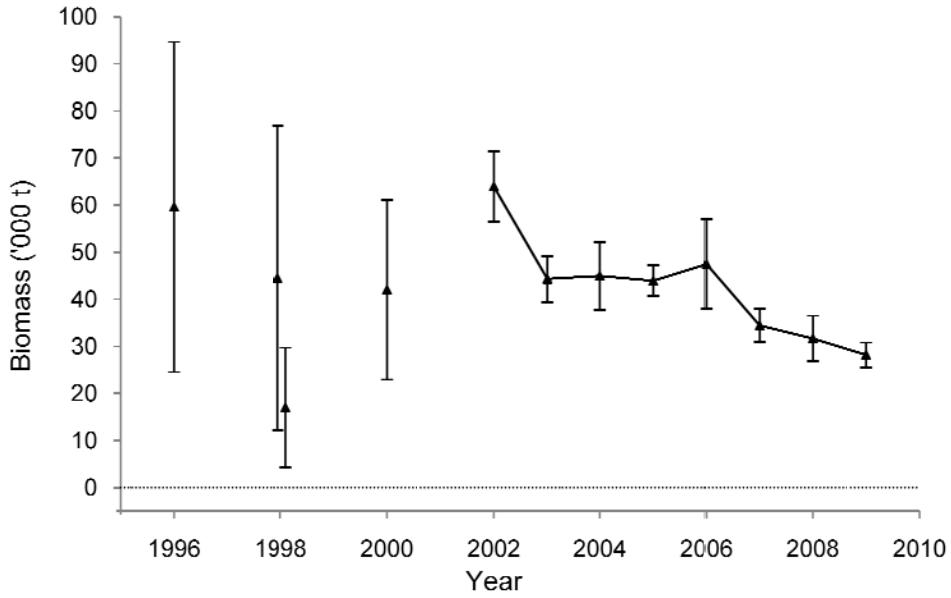


Figure 2: Estimates of orange roughy spawning biomass from the Plume surveys. Errors are CVs of each estimate

Table 2: Spawning biomass estimates from the East and South Chatham Rise (assumed to have remained unchanged since 2007)

Area	Mean estimate (t)
NE Flats	5,700
NE Hills	700
Mt Muck	1,500
Andes	2,400
South Chatham Rise	2,400

32 Given the recent reduction of the Plume biomass estimate, the Deepwater Working Group considered that spawning biomass outside the Plume could also have reduced. If it is assumed that the Plume continues to represent the same proportion of the total spawning biomass in 2009 as it did in 2007 (81%), the total estimate of spawning biomass on the East and South Chatham Rise in 2009 would be 35,000 t.

33 Based on the new acoustic survey, the Deepwater Working Group concluded that the sub-stock was very likely to be below B_{MSY} and likely also to be below the soft limit. The current biomass estimate is believed to be within a range of either 9–22% B_0 or 10–26% B_0 depending on the assumptions made with respect to (1) the size of the biomass in the absence of fishing and (2) whether the spawning biomass outside the Plume has declined in recent years.

Northwest Chatham Rise

34 The status of the Northwest Chatham Rise is based on a 2006 stock assessment. The Plenary noted that this assessment is uncertain because the estimated stock status is strongly dependent on the catch per unit effort (CPUE) data from flat areas and the extent to which these data index the entire sub-stock is unknown. The model

estimated that the biomass was approximately 6,000 t and is below B_{MSY} and also likely to below the soft limit. As a result of this assessment, the catch limit was reduced to 750 t from 1 October 2006 and the stock is expected to increase slowly at this catch level.

The Sub-Antarctic and Puysegur

35 The biomass of the southern sub-stocks in ORH 3B is uncertain. No new information was presented to the Working Group regarding the status of the Puysegur or Sub-Antarctic sub-stocks. However, as stated, the ORH 3B stock as a whole is very likely to be below B_{MSY}.

36 In the last two fishing years, the Sub-Antarctic catch limit has been under-caught (88% caught in 2007-08 and 60% caught in 2008-09). Catch rates in the Sub-Antarctic have also declined in recent years in the largest established fishery (in the "Priceless" fishing area) and catch rates throughout the remainder of the Sub-Antarctic area have also been low.

37 The most recent assessment of the Puysegur sub-stock was reported in 1998. The biomass estimate of 1,100 t from that assessment was uncertain but was thought to be probably below B_{MSY} with estimates of sustainable catch of 420 t or less. In response, Industry voluntarily ceased target orange roughy fishing in Puysegur in 1997-98 and the fishery has effectively been closed since then.

Management measures proposed

38 The section describes the harvest strategy and explains how the most recent science information described above has been used to derive the recommended management measures

East and South Chatham Rise

39 In 2008, the then Minister of Fisheries agreed to implement a new harvest strategy that is consistent with the Harvest Strategy Standard. The objective of the strategy is to arrest the decline in stock biomass. Further, the Minister considered that an appropriate way and rate to move the sub-stock to at or above the level that can produce MSY was to embark on a three year phased introduction of the new harvest strategy. Accordingly, since agreeing to the harvest strategy in 2008, successive Ministers have made two reductions to the TAC which focused on the East and South Chatham Rise catch limit (Table 3). These reductions were applied to the East and South Chatham Rise sub-stock.

40 MFish considers it is appropriate to continue with the phased reduction of the TAC and requests Industry to continue to adhere to the catch limit for the East and South Chatham Rise.

Table 3: Catch limits under the three-year phased introduction of the F_{MSY}-based harvest strategy

Year	ORH 3B catch limit (TAC)	East and South Rise catch limit
2007-08	11,025 t	7,650 t
2008-09*	9,890 t	6,570 t
2009-10	8,350 t	5,100 t
Recommended for 2010-11	**4,840 t**	**2,960 t**

*First year of the three year phased reduction.

Harvest strategy for the East and South Chatham Rise

41 The harvest strategy for the East and South Chatham Rise is based on applying the fishing mortality rate (F) that, if applied constantly, would result in the maximum sustainable yield (MSY). This fishing mortality rate is referred to as FMSY.40 Under an FMSY-based harvest strategy, the same proportion of the biomass is taken from the stock each year. If the stock is above B_{MSY}, the amount taken will be higher than if the stock is below B_{MSY}, resulting in the stock being fished down towards the target level. Conversely, if the stock is below B_{MSY} the amount taken will be lower, allowing the stock to rebuild.[41]

42 The annual catch limit is determined by first estimating the spawning biomass of the sub-stock (Bspawn). This estimate is then scaled up by applying a multiplier which takes into account the proportion of the mature biomass that does not spawn each year. The multiplier is currently set at 1.49 and as such, Bcurrent = 1.49 x Bspawn.[42] Bcurrent is then multiplied by FMSY which is currently set at the rate of natural mortality (M), which is estimated to be 0.045 or 4.5%. Setting the TAC based on the natural mortality allows the same proportion of fish to be removed from the stock by fishing as would have died due to natural causes.

43 The following discussion relates to how the most recent science information has been be used to set the recommended catch limit for the East and South Chatham Rise sub-stock.

Using $B_{current}$ to set the catch limit

44 For management purposes, the average spawning biomass in the Plume from the three most recent acoustic surveys has been used to provide an estimate of current spawning biomass, and to calculate the catch limit for the East and South Chatham

[40] F_{MSY} is a biological reference point. It is the fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the Maximum Sustainable Yield (MSY) and an average biomass corresponding to B_{MSY}.

[41] Provided the stock has not been reduced to a level where 'depensatory effects' are evident. Depensatory effects occur when a population level becomes very low, and may include fundamental changes in the biology or behaviour of the species, such as the inability to spawn or the inability of individuals to find mates. This effect inhibits a population from rebuilding back to former levels.

[42] As biomass estimates are always at least one year old, current biomass is unknown. Management is therefore based on the most recent estimate available.

Rise. Following this approach, the three-year average of the Plume biomass that will be used for the 2010-11 calculation is 31,431 t.[43]

45 Using the three-year mean from the Plume surveys of 31,431 t, and the other non-plume estimates of spawning biomass from Table 2, provides a total estimate of spawning biomass of 44,131 t. When the multiplier of 1.49 is applied, the biomass estimate used to set the catch limit is 65,755 t. Multiplying the current F value of 0.045 gives a catch limit for the East & South Chatham Rise of 2,959 t. This is rounded to 2,960 t for the purpose of setting the catch limit (Table 4).

Table 4: Calculation of East and South Chatham Rise catch limit

Estimate of spawning biomass	44,131 t
Multiply by 1.49 to estimate total biomass	65,755 t
Multiply by 0.045 (F)	2,959 t
Catch limit for East and South Chatham Rise	2,960 t

46 MFish's recommended management approach is based on the continued implementation of the FMSY harvest strategy unchanged from the previous two years. The management measures recommended reflect decisions made by you in 2009, and the previous Minister of Fisheries in 2008, about the way and rate that the ORH 3B stock should be rebuilt to B_{MSY}. The 2008 decision implemented a three-year phased reduction to the ORH 3B TAC to ensure that the level of fishing pressure exerted on the stock would ensure stock sustainability. MFish considers this recommendation strikes the appropriate balance between arresting the decline in stock biomass and managing the significant cost to industry from substantial reductions to the TAC.

47 However, MFish is cognisant of the continued decline in the biomass estimates from the Plume survey. Using the three-year mean rather than the most recent (2009) point estimate of spawning biomass, and not reducing the estimates of non-Plume spawning biomass, may result in an over-estimate of current biomass. Basing the management response on an over-estimate of current biomass may result in catch limits that are too high. This may result in the stock continuing to decline or the decline being arrested over a longer time period.

48 If the estimates of the spawning biomass in the Plume continue to decline, MFish will consider revising the management approach and this would ultimately result in a review of the TAC and TACC for 2011-12. Among the management measures that may be considered are:

a) using the single point estimate to calculate spawning biomass rather than the three-year mean;

b) reducing the estimates of spawning biomass outside the Plume to reflect the possibility that the biomass in these areas has also declined;

c) applying a lower value of F than the 4.5% used currently.

49 MFish's recommendation to implement the third year of the phased reduction would result in the fishing rate being reduced to 4.5%; although the option to set the TAC and

[43] The rationale for using a three-year average in 2008 was that previous estimates of Plume biomass had fluctuated. The use of the mean became part of the agreed management approach. The three most recent Plume estimates are 28,199 t, 31,668 t and 34,427 t (mean 31,431 t).

TACC at a different level to that recommended is available to you if you believe that to do so would better meet your statutory obligations under the Act.

50 WWF considered that modelling should have been conducted to demonstrate that the proposed TAC would rebuild the ORH 3B stock at the rate required by the Harvest Strategy Standard. MFish notes that the harvest strategy being used for ORH 3B is not based on a stock assessment model. As such, there is no model with which to model the rebuild of the ORH 3B stock. Rather, the harvest strategy is based on an assumption that fishing the stock at FMSY (the fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the Maximum Sustainable Yield and an average biomass corresponding to B_{MSY}) will result in the stock rebuilding to B_{MSY}.

Northwest Chatham Rise

51 The catch limit for the Northwest Chatham Rise was reduced in 2006 and the current catch limit is projected to move the stock towards B_{MSY}, although the timeframe for this rebuild is not yet clear. MFish is not recommending any further management action at this time. However, the DWG identified in its submission the prospect of resting parts of the Northwest Chatham Rise sub-stock and MFish will pursue that further with the DWG as part of managing the sub-area catch limits within the TAC.

Sub-Antarctic and Puysegur

52 There is insufficient information about the Sub-Antarctic or Puysegur sub-stocks to implement the same FMSY harvest strategy that is being used to manage the East and South Chatham Rise fishery.

Sub-Antarctic

53 MFish has considered the overall status of the ORH 3B stock (which is very likely to be below B_{MSY}), the decline in catches and catch rates, and information from skippers who are active in the ORH 3B fishery which suggests that fish abundance in this area has reduced. In response, MFish recommends reducing the catch limit in the Sub-Antarctic sub-stock from 1,850 t to 500 t (a reduction of 1,350 t or 73%).

Puysegur

54 Since the assessment in 1998, the Puysegur sub-stock has remained largely un-fished. Industry surveys have reported catches in Puysegur of 100 t in 2004–05 and 190 t in 2005–06 and the view of fishers is that orange roughy abundance has increased following the period of effective closure. In addition, recent information from ORH 7A suggests that the status of that stock has improved significantly after a closure of a similar period.

55 Given that the fishery has remained voluntarily closed for 13 years, and that the biomass is expected to have increased during that period, MFish recommends a small allowance of 150 t in Puysegur should be allocated specifically to allow for information about the status of the stock to be generated. This allowance is well below the 420 t permitted catch estimate based on the 1998 assessment. Catches would be monitored as part of the existing management measures that are already in place for ORH 3B and would be used to inform future management decisions.

Assessment of management measures

56 This section largely addresses the requirements of the Act. The purpose of the Act is described in section 8 as being to provide for the utilisation of fisheries resources while ensuring sustainability. Section 8 also defines the meanings of utilisation and

sustainability. The management options recommended seek to achieve the purpose of the Act by setting sustainable catch limits as described below.

Setting the TAC – section 13

Section 13(2)

57 ORH 3B is managed under section 13 of the Act which requires you to set a TAC that will result in the stock being restored to or above, or maintain the stock at or above, a level that can produce the maximum sustainable yield (B_{MSY}). B_{MSY} for this stock is estimated to be 30% B_0.

58 Stock assessment information reported in the 2010 Plenary considers ORH 3B by sub-stock—specifically the Northwest Chatham Rise, the East and South Chatham Rise, and the Sub-Antarctic (Arrow Plateau, Puysegur, Pukaki South and the remaining southern areas). The status of ORH 3B in relation to B_{MSY} is determined by considering the status of each sub-stock separately and then combining these assessments together to determine the status of the stock as a whole.

Status of the ORH 3B stock as a whole

59 Based on the best available information, the East and South Chatham Rise and the Northwest Chatham Rise sub-stocks are very likely to be below the biomass that can support the maximum sustainable yield and likely to be below the soft limit for this stock. Although less information is available for the Sub-Antarctic sub-stock, the best available information suggests it too is likely to be below B_{MSY}. The information regarding Puysegur is also uncertain but MFish recommends a catch of 150 t in order to provide better information about the status of that stock.

60 Combining the best available estimates of stock biomass for the Northwest Chatham Rise, the East and South Chatham Rise and Puysegur suggests that the current biomass is of the order of 68,000 t.[44] B_0 is thought to be of the order of 450,000 t, and B_{MSY} of the order of 135,000 t. On this basis the assessed portion of ORH 3B is probably of the order of 15% B_0 which is below B_{MSY} and the soft limit of 20% B_0.

61 While there is no information on the status of the remainder of the Sub-Antarctic portion of ORH 3B, this part of the QMA probably contributes only a small percentage of the biomass of ORH 3B as a whole. This is supported by a simple analysis of the total orange roughy catch that has been taken from the various sub-stocks that have made up ORH 3B since the fishery began. Analysis of catch data shows that 92% of the total catch has come from the East and South Chatham Rise and the Northwest Chatham Rise.[45] It is not credible that the portions of ORH 3B that have not been assessed could contain sufficient orange roughy biomass to lift the stock as a whole to, or above, B_{MSY}.

62 The TAC for ORH 3B should therefore be set under section 13(2)(b) of the Act. Section 13(2)(b) is appropriate in cases where the stock biomass is likely to be below BMSY and requires a TAC that will move stock biomass towards a level that is at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks, biological characteristics and environmental conditions.

[44] East and South Chatham Rise (60,900 t); Northwest Chatham Rise (6,000 t) and Puysegur (1,100 t) (source: Plenary 2010).

[45] Dunn, M. (2008) Draft descriptive analysis of catch and effort data from New Zealand orange roughy fisheries in ORH 3B to the end of the 2006-07 fishing year.

63 There is no information to suggest that the interdependence of stocks should affect the level of the TAC for ORH 3B at this time, given that the fishery primarily targets aggregations of orange roughy and bycatch proportions are low. In terms of their biological characteristics, orange roughy are understood to be very long-lived and late maturing. While these biological characteristics render orange roughy slow to recover from overfishing, this is taken into account in the assessment and management of the ORH 3B stock. No specific environmental conditions that would affect the level of the TAC for ORH 3B have been identified.

Section 13(3)

64 Section 13(3) requires that, in considering the way and the rate that the stock may be moved towards a level that can produce MSY, you shall have regard to such social, cultural and economic factors as you consider relevant.

65 Orange roughy is a relatively valuable fishery and a reduction in the TACC will result in a significant reduction in export earnings. MFish considers that the appropriate way and rate to move the stock towards a level that can produce the MSY is consistent with the continuation of the phased introduction of the FMSY-based harvest strategy for the East and South Chatham Rise initiated in 2008 and the additional reduction to the Sub-Antarctic sub-stock.

66 The recommended measures discussed previously would equate to a further reduction of the ORH 3B TACC of 3,340 t. As the majority of orange roughy is exported, the best estimation of value is derived from export earnings. On the basis of the export value of the most common product state exported,[46] 3,340 t of orange roughy is worth approximately $17 million.

67 Although this recommended reduction is part of an agreed three-year phased reduction and has been expected, the quantum of catch to be removed from the TACC is significant. A reduction of this magnitude is expected to have a substantial impact on the operations of the companies involved in this fishery.

68 MFish is not aware of any recreational or customary Mäori interest in the fishery and no other cultural factors that MFish considers are relevant to a determination under section 13(3).

Environmental considerations

69 Section 9 of the Act sets out the following environmental principles. These principles must be taken into account when implementing management measures under the Act.

a) **Sections 9(a) and (b)** require you to take into account that associated or dependent species (those that are not harvested) be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

b) **Section 9(c)** requires you to take into account the principle that habitat of particular significance for fisheries management should be protected.

[46] Based on final FOB export figures for December 2009 of $5.09 / kg greenweight. Precise figures are difficult to estimate and will be influenced by factors such as commodity prices, exchange rate and export state.

Finfish bycatch

70 While a number of deepwater species that share similar habitat to orange roughy are taken in the ORH 3B fishery (including black, smooth and spiky oreo, black cardinal fish and alfonsino) targeted orange roughy fishing historically captures over 90% orange roughy by greenweight.[47] No increase in the ORH 3B TAC is contemplated and consequently there should be no additional effect on fish bycatch.

Biodiversity

71 The nature and extent of effects of fishing in ORH 3B are generally understood to be localised and specific to aggregations of orange roughy at 850-1,200 metre depths. While some bycatch of non-harvested species is known, the impact that fishing for ORH 3B has on the long term viability of non-harvested species and biological diversity of the aquatic environment is of greater concern in regions of steep sloping and highly diverse topographic features. Some features within ORH 3B have been set aside from all trawling, including ten seamounts and the Arrow Plateau, to mitigate the effect that fishing has on the benthic environment.

72 The main prey species for orange roughy include mesopelagic and benthopelagic prawns, fish and squid, with other organisms such as mysids, amphipods and euphausiids occasionally being important. MFish has considered the effects on associated and dependent species and biodiversity that would affect the setting of the TAC and considers the impact is addressed under the catch spreading arrangements discussed in later sections of this paper.

Shark bycatch

73 Deepwater sharks account for approximately 3% (by greenweight) of the bycatch in target orange roughy fisheries.48 The New Zealand National Plan of Action for the Conservation and Management of Sharks includes several actions to improve the monitoring of shark bycatch. No increase in the ORH 3B TAC is contemplated and consequently there should be no additional effect on shark bycatch.

Marine mammals

74 There are very few marine mammal interactions with orange roughy fisheries (Table 5). MFish considers that the management recommendation will have no additional effect on fur seals, sea lions and other marine mammals as it would not result in an increase in fishing effort.

Seabirds

75 Mandatory measures are in place across the deepwater fleet to address seabird captures, including the requirement that all trawlers deploy bird mitigation devices when fishing gear is in use. In addition, non-regulatory measures include vessel specific measures known as vessel management plans (VMPs) which set out the onboard practices that vessels must follow to avoid seabird interactions, including offal management and good factory cleanliness. MFish currently monitors vessel performance against VMPs and works in collaboration with the DWG to rectify any issues that arise during the fishing season. This practice will continue during the 2010-2011 fishing year.

[47] Anderson OF, Gilbert DJ, Clark MR (2001). Fish discards and non-target catch in the trawl fisheries for orange roughy and hoki in New Zealand waters for the fishing years 1990-91 to 1998-99. *New Zealand Fisheries Assessment Report 2001/16, 57* p.

76 While trawl fisheries for orange roughy are known to interact with seabirds, orange roughy fisheries pose relatively low risk to seabirds (Table 5). MFish is satisfied that existing regulatory and non-regulatory measures are appropriate and that the management recommendation should have no additional effects on seabirds as no increase in the ORH 3B TAC is recommended.

Table 5: Observed interactions with seabirds and marine mammals from all orange roughy trawl fisheries for the period 1 October 2005–30 September 2008[48]

Fishing year	Seabirds		Marine mammals		Total number of tows	Observed tows	Percentage of tows observed
	Dead	Alive	Dead	Alive			
2007-08	1x Giant petrel	0	0	0	3686	1588	43.08%
2006-07	1x Gibson's albatross	0	1 x fur seal	0	3882	1152	29.68%
2005-06	2 x Buller's albatross	0	0	1 x fur seal	4477	778	17.38%

Benthic impacts and coral bycatch

77 Bottom trawling can affect fragile benthic invertebrate communities but effects may be reduced if vessels repeatedly trawl along the same towlines in a fishery. There are cost implications for Industry in terms of lost or damaged gear when fishing in new areas. As a consequence Industry generally follows known trawl tracks on the Chatham Rise.

78 Two initiatives are in place to address benthic impacts. In 2001, the Minister regulated trawl closures covering 18 areas containing seamounts of varying size and depth within New Zealand. Ten of these are within the ORH 3B Quota Management Area. In addition 17 further areas have been closed to bottom trawling by regulation under the Benthic Protection Areas (BPA) initiative. Twelve of these, including the Arrow Plateau, are within the ORH 3B Quota Management Area (QMA). Across the ORH 3B QMA, 15% of the area within the recognised depth range of orange roughy is closed to bottom trawling through either the BPA initiative or the seamount closures. For these reasons, MFish considers that the recommended option would have no additional effects on the seabed as no increase in the TAC is recommended.

Section 11 considerations

79 In making your decision on sustainability measures for the ORH 3B stock you must also have regard to the requirements of section 11 of the Act, as follows:

a) Section 11(1)(a): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any effects of fishing on any stock and the aquatic environment. No information about any effects of fishing on any stock or on the aquatic environment, additional to that discussed elsewhere in this paper, is considered relevant to the review of sustainability measures for this stock at this time.

b) Section 11(1)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures

[48] Abraham, E.R. (2009) Seabird and marine mammal captures in New Zealand deepwater fisheries. Report prepared for the Ministry of Fisheries, 6p.

that apply currently are a TAC, TACC and an allowance for incidental fishing-related mortality. No other controls under the Act specifically apply to this stock.

c) Section 11(1)(c): Before setting or varying any sustainability measure for this stock, you must take into account the natural variability of the stock. This has been discussed previously.

d) Sections 11(2)(a) and (b): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and you consider relevant. MFish is not aware of any such policy statements, plans or strategies that should be taken into account for this stock.

e) Section 11(2)(c): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and you consider relevant. The boundaries of the quota management area for this stock do not intersect with the Park boundaries. Therefore, MFish considers there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2A)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take account of any relevant and approved fisheries plans. There is no approved fisheries plan in place for any deepwater stock at this time but the implementation of a deepwater fisheries plan is discussed in a later section.

g) Sections 11(2A)(a) and (c): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any conservation or fisheries services, or any decision not to require such services. MFish does not consider that existing or proposed services materially affect the proposals for this stock. No decision has been made to not require a service in this fishery at this time.

Allocating the TAC

80 The TAC must be apportioned between the relevant sectors and interests set out under the provisions of sections 20 and 21 of the Act. Section 21 prescribes that allowances are made for Mäori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

81 There are no known Mäori customary or recreational fisheries for orange roughy. MFish recommends retaining nil allowances for recreational and Mäori customary fishing; this is consistent with the approach that has been adopted since orange roughy became a QMS species in 1986.

82 The allowance for other sources of fishing-related mortality has been previously set at 5% of the TACC to account for lost fish and discards etc. There is no information to support a variation to this figure at this time. Under the option recommended this equates to 230 tonnes.

83 As a consequence of the above allocations, under Option 1 the TAC and TACC would remain at 8,350 tonnes and 7,950 tonnes respectively. Option 2 would result in a TAC of 4,840 tonnes and a TACC of 4,610 tonnes.

Deemed values

84 Section 75 of the Act requires that you set deemed value rates for every stock in the Quota Management System (QMS). This is to ensure there are appropriate incentives for fishers to acquire or maintain sufficient Annual Catch Entitlement (ACE) so that catch limits are not exceeded.

85 The current deemed value rates were revised in 2007 and are set as follows:

a) The annual deemed value rate is $4.00 per kg.

b) The interim deemed value rate is $2.00 per kg.

c) A differential deemed value rate of $5.00 applies to catch in excess of 110% of ACE holdings.

86 MFish considers these deemed value rates have been effective in constraining fishing effort to the current TACC. However, the recommended management measures represent a significant reduction in the ORH 3B TACC and may result in increased risk of the TACC being exceeded. Furthermore, the deemed values for ORH 3B are lower than those for neighbouring ORH 2B and ORH 3A stocks.

87 The deemed value standard recommends setting the annual deemed value rate between the ACE price and the port price for that stock. The current ACE trading price is $1.74 per kg and the most recent port price is $2.37 per kg. However, MFish considers that the value of orange roughy is higher than the port price and anecdotal accounts suggest the price is closer to $4.80 per kg greenweight. MFish therefore recommends increasing deemed value rates, to reduce the risk of over-catching the TACC and to be consistent with neighbouring orange roughy stocks, as follows:

a) The annual deemed value rate would be $5.00 per kg.

b) The interim deemed value rate would be $2.50 per kg.

c) A differential deemed value rate of $6.25 would apply to catch in excess of 10% of ACE holdings.

88 With few vessels operating in this fishery, and monthly catch monitoring arrangements working well, catch has historically been closely aligned with catch limits. MFish is confident this will continue. Fishing activity will continue to be monitored during the 2010-2011 fishing year and if there is evidence that fishers are either fishing in excess of the TACC, or fishing in excess of their individual ACE holdings, then the deemed value rates will be reviewed again for the 2011-2012 fishing year.

Compliance issues

89 Key offences that may occur in ORH 3B include misreporting of QMA, species and weights; and fishing in closed areas. The significant reduction in the TAC recommended may increase the incentive to offend.

90 However, the ORH 3B fishery is closely managed from an Industry perspective with few boats operating in the fishery and 96.1% of the ORH 3B quota owners represented by the DWG. DWG currently monitors adherence to voluntary catch spreading arrangements and provides monthly reports to MFish. DWG notifies MFish when catch

reaches 80% of the sub-stock limits, and also notifies MFish when any limit has been reached. Observer coverage in the deepwater trawl fisheries generally is also high with about 30% of tows observed in the 2006-07 fishing year and 43% in 2007-08.

91 MFish considers that the monitoring arrangements are robust and appropriate. DWG and MFish will continue to closely monitor this fishery to ensure compliance with management arrangements.

Additional management measures

Sub-QMA catch spreading arrangements

92 Where several biological stocks exist in a single QMA, catch spreading arrangements ensure fishing effort is not concentrated in one or two areas which would increase fishing pressure on those biological stocks. To achieve this, catch limits for each sub-stock are put in place to reduce fishing pressure on individual biological stocks and these limits are monitored by MFish and DWG. MFish continues to support catch spreading in the ORH 3B fishery and the DWG has re-iterated its commitment to the catch-spreading and monitoring arrangements that are in place.

93 As a consequence of the reduction of the catch limit in the Sub-Antarctic area to 500 t, MFish recommends removing the 500 t feature limit currently in place in the Sub-Antarctic area of ORH 3B.

94 The Arrow Plateau has been closed to bottom trawling by regulation under the BPA initiative and the catch limit for this portion of the stock will remain at zero.

95 MFish recommends that sub-stock catch limits and the associated reporting requirements continue to be managed by DWG. MFish undertakes to continue to monitor DWG reports and operators' fishing patterns to evaluate the effectiveness of these catch limits; particularly for the Puysegur area. MFish will ensure that, through joint MFish-DWG communications, operators are fully informed as to the progress of catch taken against sub-stock limits.

Future management

96 MFish, in collaboration with Industry and environmental organisations, has developed a draft National Fisheries Plan for Deepwater and Middle-Depth Fisheries which includes a chapter on all orange roughy fisheries, including ORH 3B. The management action described therein will guide the management of all orange roughy fisheries over the next five years. Formal consultation with all stakeholder groups closed on 11 June 2010 and following consideration of submissions the Plan will be sent to you for your consideration.

Recommendations

97 MFish recommends that, for the fishing year commencing on 1 October 2010, you:

EITHER

Option 1 (status quo): Agree to retain the TAC for ORH 3B at 8,350 tonnes and within the TAC:

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Retain an allowance of 400 tonnes for other sources of fishing-related mortality;

iii) Retain the TACC at 7,950 tonnes.

AND

Note that as part of managing the ORH 3B fishery, by way of other non-statutory management measures, MFish will request that Industry implement the following sub-stock catch limits within the TACC of 7,950 tonnes:

i) The catch limit for the East and South Chatham Rise sub-stock would remain at 5,100 tonnes;

ii) The Industry research survey allowance for the East and South Chatham Rise sub-stock would remain unchanged at 250 tonnes in addition to the sub-stock catch limit;

iii) The catch limit for the Sub-Antarctic sub-stock would remain at 1,850 tonnes;

iv) The catch limit for the Northwest Chatham Rise sub-stock would remain at 750 tonnes;

v) The catch limit for the Puysegur sub-stock would remain at 0 tonnes.

OR

Option 2 (MFish recommendation): Agree to reduce the TAC for ORH 3B from 8,350 tonnes to 4,840 tonnes and within the TAC:

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Set an allowance of 230 tonnes for other sources of fishing-related mortality;

iii) Set the TACC at 4,610 tonnes.

AND

Note that as part of managing the ORH 3B fishery, by way of other non-statutory management measures, MFish will request that Industry implement the following sub-stock catch limits within the TACC of 4,610 tonnes:

i) The catch limit for the East and South Chatham Rise sub-stock would be set at 2,960 tonnes (a reduction of 2,140 t or 42%);

ii) The Industry research survey allowance for the East and South Chatham Rise sub-stock would remain unchanged at 250 tonnes in addition to the sub-stock catch limit;

iii) The catch limit for the Sub-Antarctic sub-stock would be set at 500 tonnes (a reduction of 1,350 tonnes or 73%);

iv) The catch limit for the Northwest Chatham Rise sub-stock would remain at 750 tonnes;

v) The catch limit for the Puysegur sub-stock would increase from 0 tonnes to 150 tonnes specifically for research to monitor the status of the stock.

AND, EITHER

Agree to retain the current deemed value rates for ORH 3B as follows:

i) The annual deemed value rate is $4.00 per kg.

ii) The interim deemed value rate is $2.00 per kg.

iii) A differential deemed value rate of $5.00 per kg applies to catch in excess of 10% of ACE holdings.

OR

Agree to amend the deemed value rates for ORH 3B as follows

i) Increase the annual deemed value rate from $4.00 to $5.00 per kg.

ii) Increase the interim deemed value rate from $2.00 to $2.50 per kg.

iii) Increase the differential deemed value rate from $5.00 to $6.25 per kg for all catch in excess of 10% of ACE holdings.

ORANGE ROUGHY (ORH 7A)

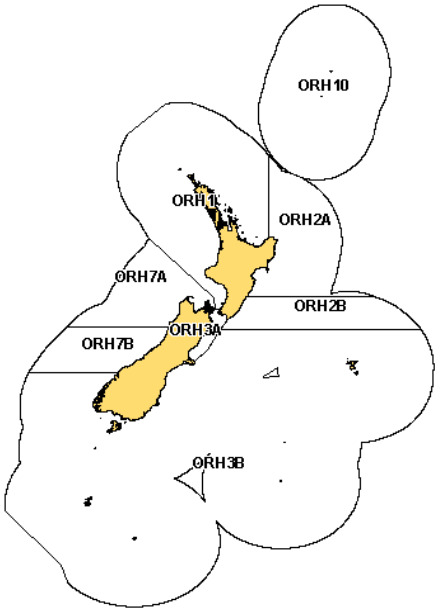


Figure 1: Quota Management Areas (QMA) for orange roughy

Executive summary

1 The ORH 7A fishery has historically occurred in the south-western region of the Challenger Plateau. Catches peaked in the late 1980s at about 10,000–12,000 t but then dropped sharply in the early 1990s and remained at 1,000–2,000 t for much of that decade.

2 A stock assessment was carried out for ORH 7A in 2000 which estimated the biomass to be 3% of un-fished biomass (B_0). Consequently the total allowable catch (TAC) for the ORH 7A fishery was reduced to 1 tonne in 2000 which effectively closed the fishery.

3 Since 2005 a number of trawl and acoustic surveys have been conducted. Based on the most recent information from these surveys, the biomass in 2009 has been conservatively estimated to be 22,700 t or 25% B_0.

4 MFish recommends increasing the TAC for ORH 7A. Applying a harvest strategy that is consistent with that implemented in ORH 3B in 2008 would allow a TAC of 1,022 t. However, MFish considers a more cautious approach is warranted for this fishery and so recommends a TAC of only 525 t and a TACC of 500 t.

5 There are no known Mäori customary or recreational fisheries for orange roughy. MFish recommends retaining nil allowances for these sectors and an allowance for other sources of fishing-related mortality of 5% of the TACC (25 t).

6 MFish has reviewed the deemed value rates for ORH 7A and recommends retaining the current interim and annual deemed values at $1.60 and $3.20 respectively.

Background information

7 The ORH 7A fishery has historically occurred in the south-western region of the Challenger Plateau. Catch was historically taken both inside and outside the EEZ.

8 Annual catches peaked in the late 1980s at about 10,000–12,000 t but then dropped sharply in the early 1990s and remained at 1,000–2,000 t for much of that decade. A stock assessment was carried out for ORH 7A in 2000 which estimated the biomass to be 3% of un-fished biomass (B_0). On the basis of that assessment, the TAC for the ORH 7A fishery was reduced to 1 t in 2000; this effectively closed the fishery.

9 In 2005, a combined trawl and acoustic survey was carried out using the FV Thomas Harrison. Other surveys took place in 2006 and in 2009. In 2005 and 2006, the trawl survey produced biomass estimates of about 20,000 t; however, in 2009 the trawl estimate was significantly higher at about 52,000 t. The large increase in spawning biomass between the 2005/2006 surveys and the 2009 survey was confirmed by the acoustic survey results.

10 During the 2005 and 2006 surveys, few signs of orange roughy spawning were seen, but in 2009 two separate spawning plumes were seen and surveyed. Strong acoustic marks were also seen on some hills but the species composition of these marks is not known.

Consultation

11 Your decision on adjusting the TAC for ORH 7A is a decision under section 13 of the Fisheries Act 1996 (the Act) and therefore the consultation requirements of section 12 apply. Further, in respect of your decision on adjusting the TACC for ORH 7A, the consultation requirements set out in section 21(2) apply.

12 Consultation on the initial position paper (IPP) was undertaken with such persons or organisations representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Maori, environmental, commercial and recreational interests.

13 MFish followed its standard consultation process for IPPs in the October 2010 sustainability round. This involved posting all IPPs on MFish's website and alerting stakeholders to this through a letter sent to approximately 350 companies, organisations and individuals.

14 MFish consulted on the two options that are set out in Table 1

Table 1: Summary of management options proposed for the ORH 7A fishery

	Option 1 (status quo)	Option 2 (MFish recommended option)
TAC	1 t	525 t
Customary Maori allowance	0 t	0 t
Recreational allowance	0 t	0 t
Other sources of fishing-related mortality (5% of TACC)	0 t	25 t
TACC	1 t	500 t

Submissions received

15 Submissions were received from the following:

a) Greenpeace Aotearoa New Zealand (Greenpeace)

b) Royal Forest & Bird Protection Society (Forest & Bird)

c) Environment and Conservation Organisations of NZ Inc (ECO)

d) WWF – New Zealand (WWF)

e) Sanford Limited (Sanford)

f) New Zealand Seafood Industry Council Ltd (SeaFIC)

g) The Deepwater Group Ltd (DWG)

h) Mr Matthew Hardyment

i) Mr Mark Clayson

j) Mr Aaron Cross

k) Neha Saigal

All submissions are attached as Volume Two to this paper for your reference.

Submissions on catch limits

16 Greenpeace, Forest & Bird, ECO and WWF all submitted that the fishery should remain closed.

17 Greenpeace submitted that the current research into stock status should be replaced with research into the biodiversity of the area with a view to establishing a network of fully protected marine reserves.

18 Forest & Bird submitted that research is not sufficient to reopen the fishery and that the estimate of current biomass should be treated with extreme caution. Forest & Bird recommended that a full population model should be fitted to the survey data prior to the stock being reopened. Forest & Bird also hypothesised that further work may suggest that a continuation of the rebuild strategy is more appropriate than opening the stock to fishing.

19 WWF was concerned at the proposal to adopt the same harvest strategy as that applied to ORH 3B as WWF suggested that this had appeared to have failed for that stock. WWF also submitted that modelling should have been conducted to demonstrate that the proposed TAC would rebuild the ORH7A stock at the rate required by the Harvest Strategy Standard.

20 Sanford, SeaFIC and the DWG all submitted that the fishery should be reopened with a TACC of 500 t. All submitters expressed the view that 500 t was a conservative TACC based on current information. SeaFIC submitted that the cautious approach proposed provided the opportunity to gain further information while providing a limited utilisation opportunity. Sanford submitted that the conservative approach proposed should allow the stock to rebuild more quickly than a higher TAC and would provide a limited utilisation opportunity. The DWG also supported a cautious TAC noting that this was a first step towards the implementation of the full FMSY harvest strategy based on the best available information.

21 Mr Hardyment is a fisherman with some 25 years experience; including 10 years in ORH 7A before its closure. Mr Hardyment supported the TAC increase and submitted that in his view the ORH 7A biomass was not reduced to the level MFish suggested. Mr Hardyment recounted seeing lots of small orange roughy schools throughout ORH 7A and hypothesised that, due to high fishing pressure, the larger schools had dispersed as a self-defence mechanism.

22 Mr Clayson submitted that he did not agree to the increase of any TAC or TACC for any stock for the near future. In support of this view Mr Clayson stated that fish numbers were decreasing in the New Zealand Exclusive Economic Zone (EEZ).

23 Mr Cross submitted that the fishery should remain closed as it had not had time to rebuild and there was insufficient information to support the resumption of fishing.

24 Neha Saigal submitted against opening the fishery; primarily because bottom trawling is used to catch orange roughy and concern was expressed that this method can cause destruction of marine habitats.

Submissions on deemed values

25 SeaFIC supports the proposal to retain deemed values at the current rate but suggested that a differential deemed value rate be implemented if the TACC is exceeded (MFish notes that differential deemed values are already in place). Forest & Bird questioned why the deemed values for ORH 7A were not aligned with the new deemed value rates proposed for ORH 3B. No other submitters commented on deemed values.

Rationale for management intervention

26 This section describes the information that was used to support the management options provided in this paper.

Estimate of current biomass

27 The Deepwater Working Group considered that the acoustic survey results for 2009 could be used as a minimum biomass estimate for this stock. The estimate was based only on the two spawning plumes and did not include estimates from other strata where orange roughy were found during the trawl survey. For this reason the Working Group considered the estimate was negatively biased and therefore provides a conservative assessment of the status of the stock on which the recommended management action is based. As not all adult orange roughy spawn each year the biomass estimate was increased by 10%.

28 Additional estimates of 2009 mature biomass were made using the trawl-survey data. However, these "total estimates" are based on very limited data and may be unreliable. Therefore, the Working Group agreed to use the more conservative acoustic survey estimates of orange roughy. Consequently, MFish recommend that management action should be based on 22,700 t as the best estimate of current biomass in ORH 7A (Table 2).

Table 2: Summary statistics for 2009 mature biomass estimate using the acoustic data only

	Median B_{2009} (t)	Mean (t)	CV (%)
Best estimate of minimum biomass	22,700	25,300	43

29 The estimate of current biomass of 22,700 t equates to 25% B_0 based on an assumed virgin biomass of 91,000 t. Although this is currently below the estimate of the biomass that can support the maximum sustainable yield (BMSY) for ORH 7A, which is considered to be 30% B_0, it is at a level that would permit some utilisation of the fishery.

Management measures proposed

30 This section describes how the information discussed above was used to arrive at the management options presented in this paper.

Harvest Strategy

31 MFish recommends using a harvest strategy for ORH 7A based on applying the fishing mortality rate (F) that, if applied constantly, would result in the maximum sustainable yield (MSY).

32 The reference fishing mortality rate is FMSY.[49] Under an FMSY-based harvest strategy, the same proportion of the biomass is taken from the stock each year. If the stock is above BMSY, the amount taken will be higher than MSY, resulting in the stock being fished down towards the target level. Conversely, if the stock is below BMSY the amount taken will be lower, allowing the stock to rebuild.

33 The annual catch limit is determined by multiplying FMSY by the best available estimate of current biomass (Bcurrent). FMSY is set based on natural mortality (M) which is estimated to be 0.045 or 4.5%. Setting the TAC based on the natural mortality allows the same proportion of fish to be removed from the stock by fishing as would have died due to natural causes.

34 This harvest strategy is based on that applied in the ORH 3B fishery. MFish notes that WWF considered that this strategy had failed for ORH 3B and should not be applied to the ORH 7A fishery. This view stems from a misunderstanding of the harvest strategy. Successive Ministers have agreed to phase in the harvest strategy in ORH 3B over a three year period and MFish considers it is premature to judge the success or otherwise of the ORH 3B harvest strategy before it has been fully implemented.

Applying the Harvest Strategy

35 The Harvest Strategy Standard establishes biological reference points (target, soft limit and hard limit) and guides the appropriate management response depending on where a stock is assessed to be in relation to these reference points.

36 The Standard states that fisheries that have been closed as a result of breaching the hard limit (10% B_0) should not be re-opened until it can be demonstrated that there is at least a 70% probability that the stock has rebuilt to, or above, the soft limit. In this case the soft limit is considered to be 20% B_0.

37 Table 3 shows the status of the ORH 7A stock in relation to the hard limit, the soft limit and the management target (BMSY) of 30% B_0. The current status of the stock, estimated to be 22,700 t, was assessed against an estimate of un-fished biomass (B_0) of 91,000 t from the 2000 assessment (Table 3).

38 Using the conservative approach adopted by the Working Group results in the stock almost certainly being above the hard limit of 10% B_0 and a greater than 70% probability of being above the soft limit as required to re-open a closed fishery.

[49] F_{MSY} is a biological reference point. It is the fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the Maximum Sustainable Yield (MSY) and an average biomass corresponding to B_{MSY}.

Table 3: Summary statistics for 2009 biomass (using best estimate of minimum biomass)

Un-fished biomass (B_0)	Current biomass	Current biomass as a percentage of un-fished biomass (%B_0)	Probability biomass is above the hard limit	Probability biomass is above the soft limit	Probability biomass is above the target (B_{MSY})
91,000 t	22,700 t	25%	100%	73%	32%

39 The best available information that is summarised above suggests that the biomass of ORH 7A is likely to be above the soft limit and that the fishery could be re-opened. If the FMSY management approach was adopted based on the biomass estimate presented in Table 2 above, this would generate a catch limit of 1,022 t (22,700 t * 0.045). Although the current biomass is below BMSY (Table 3) a catch limit of 1,022 t, based on the FMSY strategy described above, would still rebuild the fishery toward BMSY.

40 However, there remains some uncertainty about using the results of the acoustic surveys to estimate the biomass of the ORH 7A stock because of the unknown target strength of orange roughy.[50] Because of this, and considering the stock has been effectively closed since 2000, MFish recommends an even more cautious approach. MFish recommends a TAC of 525 t which is approximately half of the limit generated using the FMSY harvest strategy.

41 WWF considered that modelling should have been conducted to demonstrate that the proposed TAC would rebuild the ORH 7A stock at the rate required by the Harvest Strategy Standard. MFish notes that the harvest strategy being used for ORH 7A is not based on a stock assessment model. As such, there is no model with which to model the rebuild of the ORH 7A stock. Rather, the harvest strategy is based on an assumption that fishing the stock at FMSY (the fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the Maximum Sustainable Yield and an average biomass corresponding to BMSY) will result in the stock rebuilding to BMSY.

42 Several submitters suggested that the ORH 7A fishery should remain closed. MFish does not recommend retaining the current 1 tonne TAC as the best available information indicates the biomass of ORH 7A is at least 22,700 tonnes. MFish accepts that some caution is warranted in opening a fishery that has been closed for a considerable length of time. However, the recommended management action represents a cautious approach and provides for some utilisation while also allowing the stock to rebuild, albeit more slowly than it would in the absence of fishing.

43 Research is ongoing and planned to continue at regular intervals as part of the 10 Year Research Programme for deepwater fisheries. This will enable the status of the stock to be closely monitored and management to be adjusted accordingly.

[50] The target strength of a target fish species is the proportion of an acoustic signal transmitted from an echo-sounder, which is reflected by the target fish or school of fish. The target strength for different fish varies depending on morphological features such as the presence or size of a swim bladder. The target strength multiplier utilises a mathematical relationship to calculate the biomass of fish from the acoustic signal reflected from the fish.

Assessment of management measures

44 The following considerations largely address the requirements of the Act. The purpose of the Act is described in section 8 as being to provide for the utilisation of fisheries resources while ensuring sustainability. Section 8 also defines the meanings of utilisation and sustainability. The management options presented seek to achieve the purpose of the Act by setting sustainable catch limits as described below.

45 MFish also notes that the ORH 7A stock straddles the EEZ and the high seas; however, the proposed TAC would only be taken inside the EEZ as the high seas area is closed to trawling under the South Pacific Regional Fisheries Management Organisation (SPRFMO) interim measures.

Setting the TAC – section 13

46 MFish considers that the ORH 7A stock should be managed under s 13(2) of the Act. Section 13(2)(b) requires you to set a TAC that enables the stock whose current level is below MSY to be altered in a way and at a rate that will result in the stock being restored to, or above, a level that can produce MSY, having regard to the interdependence of stocks.

47 The best estimate of un-fished biomass (B_0) for ORH 7A is 91,000 t. The level that can produce MSY (BMSY) is thought to be 30% B_0 for this stock and consequently, BMSY would be approximately 27,300 t. As outlined above, the current biomass estimate being used to manage ORH 7A is 22,700 t and so the stock is thought to be below BMSY at 25% B_0.

48 As the current level of the stock is below BMSY, setting a TAC based on the FMSY harvest strategy should result in the biomass of the ORH 7A stock continuing to rebuild to BMSY. The likelihood that this will occur is increased by the recommendation to set the TAC at only half what would be available under this harvest strategy.

49 There is no information to suggest that the interdependence of stocks should affect the level of the TAC for ORH 7A at this time, given that the fishery primarily targets aggregations of orange roughy and bycatch proportions are low. In terms of their biological characteristics, orange roughy are understood to be very long-lived and late maturing. While these biological characteristics render orange roughy slow to recover from overfishing, this is taken into account in the assessment and management of the ORH 7A stock. No specific environmental conditions that would affect the level of the TAC for ORH 7A have been identified.

Section 13(3)

50 Section 13(3) requires that, in considering the way and the rate that the stock may be moved towards a level that can produce MSY under s 13(2)(b), you shall have regard to such social, cultural and economic factors as he considers relevant.

51 Orange roughy is a relatively valuable fishery and an additional 500 t will generate significant revenue for the industry. As the majority of orange roughy is exported, the best estimation of value is derived from export earnings. On the basis of the export value of the most common product state exported, 500 t of orange roughy is worth approximately $2.55 million.[51]

[51] Based on final FOB export figures for December 2009 of $5.09 / kg greenweight.

52 MFish is not aware of any recreational or customary Mäori interest in the fishery and no other cultural factors that MFish considers are relevant to a determination under section 13(3).

Environmental considerations

53 Section 9 of the Act sets out the following environmental principles. These principles must be taken into account when implementing management measures under the Act.

a) **Sections 9(a) and (b)** require you to take into account that associated or dependent species (those that are not harvested) be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

b) **Section 9(c)** requires you to take into account the principle that habitat of particular significance for fisheries management should be protected.

54 Given the ORH 7A fishery has been effectively closed since 2000, little is known about the specific environmental issues associated with the fishery. However, it is reasonable to assume these will be similar to those in other orange roughy fisheries.

By-catch

55 The specific nature and extent of effects of fishing on ORH 7A and the environment are generally expected to be localised and specific to aggregations of orange roughy at 850-1,200 metre depths. While some bycatch of non-harvested species is expected, 85% of the catch from observed orange roughy target trawls between 1 October 2005 and 30 September 2008 was orange roughy. Those species that are caught in conjunction with orange roughy (ORH 7A) are deepwater dogfish, spiky oreos and ribaldo.[52] Fish bycatch will be monitored as part of the usual reporting process and managed accordingly.

Marine mammals

56 There are few marine mammal interactions with orange roughy fisheries (Table 4). MFish considers that the management recommended is unlikely to have any additional effect on fur seals, sealions and other marine mammals but MFish will monitor any interaction with all protected species.

Seabirds

57 While trawl fisheries for orange roughy are known to interact with seabirds, orange roughy fisheries pose relatively low risk to seabirds (Table 4). Mandatory measures are in place across the deepwater fleet to address seabird captures, including the requirement that all trawlers deploy bird mitigation devices when fishing gear is in use. In addition, non-regulatory measures include vessel specific measures known as vessel management plans (VMPs), which set out the onboard practices that vessels must follow to avoid seabird interactions, including offal management and good factory cleanliness. MFish currently monitors vessel performance against its VMP and works in collaboration with the DWG to rectify any issues that arise during the fishing season. This practice will continue during the 2010-2011 fishing year.

[52] Draft National Fisheries Plan for Deepwater and Middle-depth Fisheries.

Table 4: Extent of observed interactions with seabirds and marine mammals from the orange roughy trawl fisheries for the period 1 October 2005 – 30 September 2008[53]

Year	Seabirds		Marine mammals		Total number of tows	Observed tows	Percentage of tows observed
	Dead	Alive	Dead	Alive			
2007-08	1 Giant petrel	0	0	0	3686	1588	43.1%
2006-07	1 Gibson's albatross	0	1 x fur seal	0	3882	1152	29.7%
2005-06	2 Buller's albatross	0	0	1 x fur seal	4477	778	17.4%

58 MFish is satisfied that existing regulatory and non-regulatory measures are appropriate and that the management recommended is unlikely to have any additional effect on seabirds; MFish will monitor any interactions.

Benthic impacts and coral bycatch

59 Bottom trawling can affect fragile benthic invertebrate communities but adverse effects may be reduced if vessels repeatedly trawl along the same towlines in a fishery. There are cost implications for Industry in terms of lost or damaged gear when fishing in new areas and as a result, fishing effort is likely to continue in areas previously fished.

60 In 2007, 17 areas were closed to bottom trawling by regulation under the Benthic Protection Areas initiative which amount to over 30% of the EEZ; two of these closures occur in ORH7A. MFish considers that the recommendation to increase the TAC would result in a minimal increase in the area contacted by trawling and the management measure in place is sufficient to avoid any adverse effects on the seabed.

61 Bottom fishing interim conservation and management measures were adopted in 2007 in the negotiations to establish a South Pacific Regional Fisheries Management Organisation (SPRFMO). Bottom trawling by New Zealand vessels has consequently been prohibited on the high seas outside of areas previously bottom trawled (including the area directly adjacent to ORH 7A) in the period 2002-2006 for the purposes of preventing significant adverse impacts on vulnerable marine ecosystems (VMEs).

Section 11 considerations

62 In making your decision on sustainability measures for the ORH 7A stock you must also have regard to the requirements of section 11 of the Act, as follows:

a) Section 11(1)(a): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any effects of fishing on any stock and the aquatic environment. No information about any effects of fishing on any stock or on the aquatic environment, additional to that discussed elsewhere in this paper, is considered relevant to the review of sustainability measures for this stock at this time.

b) Section 11(1)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC and an allowance for incidental fishing-

[53] Abraham ER. (2009) Seabird and marine mammal captures in New Zealand deepwater fisheries. Report prepared for the Ministry of Fisheries, 6p.

related mortality. No other controls under the Act specifically apply to this stock.

c) Section 11(1)(c): Before setting or varying any sustainability measure for this stock, you must take into account the natural variability of the stock. This has been discussed previously.

d) Sections 11(2)(a) and (b): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and you consider relevant. MFish is not aware of any such policy statements, plans or strategies that should be taken into account for this stock.

e) Section 11(2)(c): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and you consider relevant. The boundaries of the quota management area for this stock do not intersect with the Park boundaries. Therefore, MFish considers there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2A)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take account of any relevant and approved fisheries plans. There is no approved fisheries plan in place for any deepwater stock at this time but the implementation of a deepwater fisheries plan is discussed in a later section.

g) Sections 11(2A)(a) and (c): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any conservation or fisheries services, or any decision not to require such services. MFish does not consider that existing or proposed services materially affect the proposals for this stock. No decision has been made to not require a service in this fishery at this time.

Allocating the TAC

63 The TAC must be apportioned between the relevant sectors and interests set out under the provisions of sections 20 and 21 of the Act. Section 21 prescribes that allowances are made for Mäori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

64 As noted, there are no known Mäori customary or recreational fisheries for orange roughy. MFish recommends retaining nil allowances for recreational and Mäori customary fishing, consistent with the approach that has been adopted since orange roughy became a Quota Management System (QMS) species in 1986.

65 The allowance for other sources of fishing-related mortality has been previously set at 5% of the TACC to account for lost fish and discards etc. There is no information to support a variation to this figure and therefore an allowance of 25 t is recommended.

66 As a consequence of the above allocations, under Option 1 the TAC and TACC would remain at 1 tonne. Under Option 2 the TAC would be set at 525 tonnes and the TACC at 500 tonnes.

Deemed values

67 Section 75 of the Act requires that you set deemed value rates for every stock in the QMS. This is to ensure there are appropriate incentives for fishers to acquire or maintain sufficient annual catch entitlement (ACE) so that fishing effort does not result in catch limits being exceeded. Standard differential deemed values also apply to all catch in excess of 120% of ACE holdings.

68 The current deemed value rates are set as follows:

a) The annual deemed value rate is $3.20 per kg.

b) The interim deemed value rate is $1.60 per kg.

69 These deemed value rates are similar to those of neighbouring orange roughy stocks and MFish considers these rates would be effective at constraining fishing effort to the TACC. If the TACC is increased and there is evidence that fishers are either fishing in excess of the TACC, or fishing in excess of their individual ACE holdings, then the deemed value rates will be reviewed again for the 2011-2012 fishing year.

Compliance issues

70 Key offences that may occur in ORH 7A include misreporting of QMA, species and weights. However, these risks are believed to be manageable and current MFish processes should be sufficient to monitor this fishery and ensure compliance with management arrangements.

Future management

71 MFish, in collaboration with Industry and environmental organisations, has developed a draft National Fisheries Plan for Deepwater and Middle-Depth Fisheries which includes a chapter on all orange roughy fisheries. Formal consultation with all stakeholder groups closed on 11 June 2010 and, following consideration of submissions, the Plan will be sent to you for consideration. This Fisheries Plan will guide future management of the ORH 7A fishery.

Recommendations

72 MFish recommends that, for the fishing year commencing on 1 October 2010, you:

EITHER

Option 1 (status quo): Agree to retain the TAC for ORH 7A of 1 tonne and within the TAC:

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Retain a nil allowances for other sources of fishing-related mortality;

iii) Retain the TACC of 1 tonne.

OR

Option 2 (MFish recommendation): Agree to increase the TAC for ORH 7A from 1 tonne to 525 tonnes and within the TAC:

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Set an allowance of 25 tonnes for other sources of fishing-related mortality;

iii) Set the TACC at 500 tonnes.

AND

Agree to retain the current deemed value rates for ORH 7A.

PATAGONIAN TOOTHFISH (PTO 1)

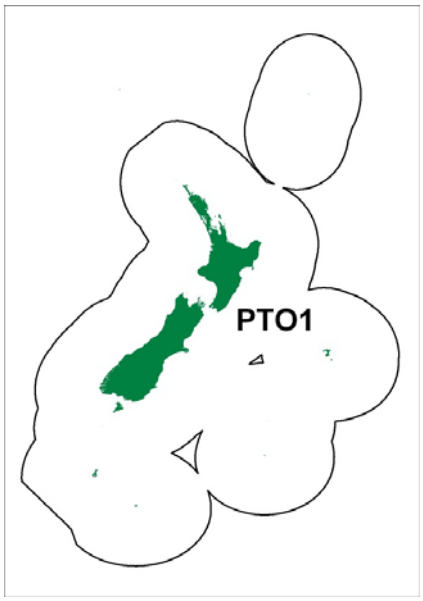


Figure 1. Patagonian toothfish (PTO) quota management area

Executive summary

1 Earlier this year you agreed to introduce Patagonian toothfish ("toothfish") into the QMS on 1 October 2010, with a single Quota Management Area (QMA) encompassing all New Zealand fisheries waters (PTO1). Toothfish found in the New Zealand exclusive economic zone (EEZ) are likely to be part of a wider stock distributed around the southern Pacific Ocean.

2 The Ministry of Fisheries (MFish) recommends you set a total allowable catch (TAC) of 50 tonnes. Within the TAC MFish recommends a total allowable commercial catch (TACC) of 49.5 tonnes with a 0.5 tonne allowance for other sources of fishing-related mortality. MFish recommends nil customary and recreational allowances.

3 MFish also recommends that you set the following deemed value rates for PTO1: an annual deemed value rate of $12.50 per kg; an interim rate of $11.25 per kg; and a differential rate of $20.00 per kg, which would apply to catch more than 10% in excess of annual catch entitlement (ACE) holdings.

4 MFish considers that management objectives regarding ensuring stock sustainability, managing any environmental effects associated with toothfish fishing and an appropriate monitoring programme can be achieved through the existing management regime in place for all QMS stocks. For this reason MFish is not recommending additional management measures specifically for toothfish at this time.

5 MFish is satisfied that the proposed TAC, together with existing management measures, will contribute to sustainable management of the wider toothfish stock throughout its range. MFish also considers the proposed New Zealand management regime will be compatible with the management regimes in the CCAMLR[54] Area and Australian EEZ Macquarie Island toothfish fisheries.

[54] Convention for the Conservation of Antarctic Marine Living Resources

Background

6 On 4 March 2010 you declared, by notice in the New Zealand Gazette, that toothfish stocks would be subject to the QMS from 1 October 2010. Concurrently, you also defined the QMA (as shown in Figure 1 above), agreed that toothfish would be subject to the 1 October fishing year and agreed that the TACC and ACE be expressed in greenweight.

7 On 3 June 2010 you agreed to implement consequential regulatory measures necessary to support the introduction of toothfish into the QMS. Measures related to a new reporting code, implementing a 45% quota aggregation limit and permitting live fish to be returned to the sea.

8 Toothfish found in the New Zealand EEZ are likely to form part of a wider straddling and transboundary stock encompassing:

a) The Australian EEZ around Macquarie Island, which abuts New Zealand's southern EEZ boundary;

b) The high seas waters directly adjacent to the southern portion of the EEZ within the South Pacific Regional Fisheries Management Organisation (SPRFMO) Area; and

c) The northern waters of the Ross Sea, in the area managed by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

9 New Zealand has obligations, under the United Nations (UN) Convention on the Law of the Sea and the UN Fish Stocks Agreement (UNFSA), to cooperate with other States and organisations with fisheries management responsibilities to establish compatible management measures to ensure conservation and management of straddling and transboundary fishstocks in their entirety.

Consultation

10 Your decision on setting the TAC for PTO1 is a decision under section 13 of the Fisheries Act 1996 (the Act) and therefore the consultation requirements of section 12 apply. Further, in respect of your decision on adjusting the TACC for PTO1, the consultation requirements set out in section 21(2) apply.

11 Consultation on the Initial Position Paper (IPP) was undertaken with such persons or organisations representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Maori, environmental, commercial and recreational interests.

12 MFish followed its standard consultation process for IPPs in the October 2010 sustainability round. This involved posting all IPPs on MFish's website and alerting stakeholders to this through a letter sent to approximately 350 companies, organisations and individuals.

13 In the IPP MFish consulted on the proposed catch limit set out in Table 1 and the proposed deemed value rates set out below.

Table 1: Proposed catch limits for PTO1

	Proposal
TAC (t)	50
Allowance for customary Maori (t)	0
Recreational allowance (t)	0
Other sources of fishing related mortality (t) (1% of the TACC)	0.5
TACC (t)	49.5

14 MFish proposed the following deemed value rates:

a) Annual deemed value rate – $12.50 per kg

b) Interim deemed value rate – $11.25 per kg

c) Differential deemed value rate of $20.00 per kg for all catch that is 10% in excess of a fisher's annual catch entitlement

15 The IPP also consulted on MFish's approach to managing the fishery. MFish did not propose any additional management measures, with the exception of collecting some additional fine scale data and information on a non-regulatory basis.

Submissions received

16 Submissions on the management measures proposed were received from:

a) Environment and Conservation Organisations of NZ Inc. (**ECO**)

b) Royal Forest and Bird Protection Society of New Zealand Inc. (**Forest and Bird**)

c) Greenpeace Aotearoa New Zealand Inc. (**Greenpeace**)

d) Hokotehi Moriori Trust (**the Trust**)

e) Sanford Ltd (**Sanford**)

f) The New Zealand Seafood Industry Council Ltd (**SeaFIC**)

g) Sealord Group Ltd (**Sealord**)

h) Te Ohu Kai Moana Trustee Ltd (**TOKM**)

Submissions on catch limits and deemed value rates

17 In summary, the Trust, Sanford, SeaFIC and TOKM supported the proposed 50 tonne TAC. Sealord proposed a 20 tonne TAC while ECO, Forest and Bird and Greenpeace proposed either a 1 tonne TAC or retaining exploratory fishery status.

18 Only the Sanford, SeaFIC and TOKM submissions addressed the proposed deemed value rates. Sanford supported the proposed rates while SeaFIC and TOKM did not. SeaFIC and TOKM were concerned that the relatively high proposed deemed value rates may result in high ACE prices and potentially stifle development of the fishery.

Submissions on management approach

19 Three submissions (Sanford, SeaFIC and TOKM) commented on MFish's proposed management approach and all indicated support for that approach. Several submissions also noted that New Zealand must engage with Australia on managing this fishery.

Rationale for management intervention

20 The Act requires that all fish stocks managed under the QMS must have a TAC, TACC and deemed value rates set prior to the start of the fishing year. Toothfish will enter the QMS on 1 October 2010 and these statutory measures must therefore be in place prior to this date.

Management measures proposed

21 There are currently no estimates of biomass, sustainable yield, or stock status for the component of the toothfish stock found within New Zealand's EEZ. Although there is some information available on the Macquarie Island component of the toothfish stock, it is unclear how this applies to the toothfish stock throughout its range and whether it can be used to determine where the TAC should be set for the New Zealand component of the stock.[55] There is no stock status information for the component of the toothfish stock found within New Zealand's EEZ to determine a sustainable yield and the level at which the toothfish TAC should be set.

22 The limited amount of fishing that has taken place to date has resulted in less than 50 tonnes in total being landed since 1994. Fishing has been sporadic and has varied between no toothfish being landed during some years to approximately 20 tonnes being taken by one vessel over a two week period in 2009. For this reason MFish does not consider it appropriate to base the initial TAC on the average of recent landings, which is the approach that has been taken for other species that have recently been introduced into the QMS.

23 In the absence of other information MFish considers that key factors to consider when determining a level at which to set the TAC include:

a) The toothfish stock is likely to be distributed over an area much larger than the area within the New Zealand EEZ;

b) The area of potential habitat outside the Macquarie Island EEZ is potentially as large or greater than the area within Australia's Macquarie Island EEZ; and

c) The current TAC for Australia's Macquarie Island toothfish fishery is set at a sustainable level for that portion of the stock,

24 When considered together these factors indicate that a sustainable yield in the order of several hundred tonnes may well be plausible for the area of potential habitat outside the Macquarie Island EEZ, which includes habitat inside the NZ EEZ. However, given the lack of information and inherent uncertainty MFish recommends that you set a nominal[56] TAC of 50 tonnes. Within the TAC MFish recommends you set a TACC of 49.5 tonnes and an allowance for other sources of fishing-related mortality of 0.5 tonnes. MFish considers a catch limit set at this level is appropriate as it represents a cautious approach to the development of this fishery. It is also likely to ensure that both the portion of the toothfish stock within New Zealand's EEZ and the wider stock are managed sustainably.

25 ECO and Greenpeace would prefer that additional information is gathered on sustainable yields and recommend a one tonne TAC in the interim. Forest and Bird recommends the retention of the status quo as an exploratory fishery. MFish understands these preferences but considers that a 50 tonne TAC will ensure the stock is managed sustainably and that quota owners are more likely to undertake

[55] The current catch limit for the Macquarie Island toothfish fishery is 290 tonnes

[56] A nominal catch limit refers to a catch limit that is set at a low, cautious level, reflecting the limited information on stock status.

fishing activity that will gather information on the fishery under a 50 tonne TAC than a 1 tonne TAC.

26 Sealord believes that the fishery is likely to be a fringe fishery at the furthest edge of the distribution of the stock and that expansion of a fishery on this straddling and transboundary stock should be discouraged. They also state that fishing to date has not resulted in toothfish being taken at a rate that will support a commercial fishery.

27 Sealord recommends a 20 tonne catch limit for two reasons, the first being the possible impact on the sustainability of the Macquarie Island fishery. MFish agrees that the transboundary nature of the toothfish stock means that any fish taken in New Zealand waters has the potential to have some impact on the Macquarie Island toothfish fishery. However, MFish considers a 50 tonne catch limit will enable some exploratory fishing to take place to provide information on toothfish's distribution within the EEZ and the relationship between fish in the New Zealand and Australian Macquarie Island EEZs.

28 Sealord's second concern is that there may some implications for the CCAMLR fishery. Sealord notes that the proposal for a 50 tonne catch limit may encourage some CCAMLR Members to argue for reopening of one of the CCAMLR subareas, which currently has a zero catch limit to ensure fishing effort and toothfish tagging is concentrated to support data collection for stock assessment purposes. MFish does not consider that a New Zealand catch limit of 50 tonnes will undermine CCAMLR's rationale and purpose for the current zero catch limit in the subarea concerned.

29 MFish's recommendation is unchanged from the proposal in the IPP. MFish acknowledges the issues raised in submissions but considers that a 50 tonne catch limit is appropriate.

Assessment of management measures

30 MFish considers that the measures recommended in this paper satisfy section 8 of the Act in that they provide for utilisation of the toothfish fishery while ensuring the long term sustainability of the stock. The recommended TAC provides for utilisation of the toothfish resource, while taking an approach that reflects the absence of information on stock biomass and yield. The management options recommended seek to achieve the purpose of the Act by setting a sustainable catch limit as described below.

Setting the TAC – sections 13 and 14

31 A TAC has never been set for the PTO1 stock. The Act provides three mechanisms that can be used to set a TAC. These are set out below.

Section 13(2)

32 In order for you to set a TAC under section 13(2) of the Act an estimate of the current biomass of a stock (Bcurrent) and the biomass that produces the maximum sustainable yield (BMSY) is required. As described above, the current status of the component of the toothfish stock found in New Zealand's EEZ in relation to BMSY is unknown, which precludes setting the TAC for toothfish under this section.

Section 13(2A)

33 Section 13(2A) enables you to set a TAC for stocks where Bcurrent and BMSY are not able to be estimated reliably using the best available information, as is the case with PTO1.

34 Section 13(2A) requires you to have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stocks. It requires you to set a TAC:

a) Using the best available information; and

b) That is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, B_{MSY}.

35 You must not use the absence of, or uncertainty in, the best available information as a reason for postponing or failing to set a TAC.

Section 14

36 The Act allows you to set TACs under section 14 if the stock is listed on Schedule 3 of the Act (this Schedule lists stocks managed with an alternative total allowable catch). Toothfish is not currently listed on this Schedule but could be added if it satisfied one of the four criteria specified in section 14(8). However, MFish considers none of the criteria, which are detailed below, are applicable to toothfish.

a) It is not possible, because of the biological characteristics of the species, to estimate maximum sustainable yield (MSY). MFish considers that MSY could be estimated for toothfish.

b) A national allocation for New Zealand has been determined as part of an international agreement. There is no single international agreement that covers the wider toothfish stock found in New Zealand, Macquarie Island waters, the High Seas to the south and east of the New Zealand and Australian Macquarie Island EEZs and the northern part of the Ross Sea in the CCAMLR Area.

c) The stock is managed on a rotational or enhanced basis. Toothfish is unlikely to be managed on this basis.

d) The stock comprises 1 or more highly migratory species. Toothfish is not a highly migratory species.

37 In summary, there is no biomass information available for toothfish, which precludes using section 13(2). Use of section 14 is also precluded as toothfish is not listed on Schedule 3 and does not meet any of the criteria for addition to that Schedule. Given the lack of biomass information MFish considers that setting the TAC under section 13(2A) of the Act is appropriate for the component of the toothfish stock found in the New Zealand EEZ.

38 The recommended TAC is also likely to meet the section 13(2A)(c)(ii) requirement that a TAC is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield. Based on the likely area of potential toothfish habitat both within and outside New Zealand's EEZ and the extent to which the wider stock is fished, a 50 tonne TAC is considered unlikely to reduce the level of the stock to below that which can produce the maximum sustainable yield.

39 As noted, section 13(2A)(b) requires you to have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock. MFish anticipates that bringing toothfish into the QMS is likely to result in an increase in fishing effort in the southern part of the EEZ. The impact on interdependent fishstocks is unknown but MFish will monitor all catch taken during targeted toothfish fishing.

40 The information available on the biological characteristics of toothfish suggests that it is slow-growing and long-lived, which means a cautious TAC is appropriate. Setting a nominal TAC of 50 tonnes is considered to be sufficiently cautious. There is no information available on the environmental conditions that affect the stock.

International considerations

41 Section 5(a) of the Act requires all persons exercising or performing functions, duties, or powers to act in a manner consistent with New Zealand's international obligations relating to fishing.

42 The toothfish found in the New Zealand EEZ are likely to form part of a wider straddling and transboundary stock that encompasses the Australian EEZ around Macquarie Island, high seas waters directly adjacent to the southern portion of the New Zealand EEZ,[57] and the northern waters of the Ross Sea in the CCAMLR Area.

43 Management measures for toothfish are in place in both the CCAMLR and the Macquarie Island toothfish fisheries.[58] These measures relate to ensuring sustainability of the relevant components of the stock as well as protecting biodiversity, assessing the impacts of fishing, minimising catch of non-target species and ensuring accurate data reporting.

44 MFish considers that the management regime governing fishing activity in New Zealand is compatible with management measures in the CCAMLR and Macquarie Island toothfish fisheries and will achieve consistent objectives. Specifically, MFish considers (1) setting a low catch limit for the portion of the toothfish stock in New Zealand's EEZ and (2) ensuring that fishers have the appropriate incentives to limit their catch through the application of the deemed value regime, is compatible with New Zealand's obligations to ensure sustainable management of the wider stock.

45 MFish also considers that measures to manage the environmental effects of toothfish fishing and the monitoring and reporting regime described below are also compatible with New Zealand's international obligations.

46 As fisheries data and scientific information contribute to our understanding of the nature and status of the toothfish fishery in the New Zealand EEZ, New Zealand will engage with Australia and CCAMLR to ensure the effective management of this transboundary and straddling fish stock. The submissions from Greenpeace, Sealord and TOKM noted support for engaging with Australia on the management of this stock.

Environmental considerations

47 The Act requires that when any effect of fishing is adverse this effect should be avoided, remedied or mitigated. More specifically, section 9 requires you to take into account the following environmental principles:

a) Associated or dependent species should be maintained above a level that ensures their long-term viability (s 9(a)).

b) Biological diversity in the aquatic environment should be maintained (s 9(b)).

c) Habitat of particular significance for fisheries management should be protected (s 9(c)).

48 Given the limited fishing activity to date for toothfish in New Zealand waters MFish considers it unlikely that toothfish fishing has significantly adversely impacted the viability of any associated or dependent species, or the maintenance of biodiversity of the aquatic environment. Additionally, MFish has no information on habitat of particular significance for fisheries management in relation to toothfish.

[57] The area to be covered by the recently-agreed South Pacific Regional Fisheries Management Organisation (SPRFMO)

[58] Currently, voluntary interim conservation and management measures for bottom fisheries in the proposed SPFRMO Area have been agreed by participants to the negotiations but toothfish-specific management measures have not. Analysis of SPRFMO measures is not included in this section.

49 MFish considers the precautionary TAC recommended is unlikely to result in future fishing effort to a level where the environmental principles under section 9 of the Act are likely to be compromised. However, there are existing environmental mitigation measures in place to mitigate the risk of adverse effects from toothfish fishing, should they arise. These are discussed in more detail in the following section.

50 MFish expects that the majority of fishing activity for toothfish will be bottom longline fishing although other fishing methods will be permitted.

Seabirds

51 Mandatory measures already in place for bottom longline and trawl vessels will automatically apply to any vessel fishing for toothfish. These measures will ensure that there is unlikely to be a risk of significant adverse effects on seabird populations from toothfish fishing activity. The measures that apply across all domestic bottom longline fisheries must be implemented by all vessels greater than 7 metres in overall length and include:

a) a requirement to use streamer lines while setting lines;

b) a requirement to meet specified line weighting configurations when setting lines during daylight hours;

c) a restriction on offal or fish discharge during the setting of lines; and

d) a requirement to discharge offal or fish[59] on the opposite side of the vessel to the side where the hauling station is located when hauling lines.

52 Preliminary qualitative risk assessment work undertaken by MFish indicates that at a TACC of 50 tonnes, between 3 and 6 birds in total may be taken by vessels targeting toothfish given capture rates seen in other existing domestic bottom longline fisheries. Such additional levels of seabird bycatch are unlikely to have a significant adverse effect on seabird populations. For this reason MFish considers that the existing seabird mitigation measures that apply to any vessel fishing for toothfish are sufficient for meeting the purpose of the Act.

53 At this time MFish does not propose the implementation of any additional seabird mitigation measures. MFish will review the need for additional measures if new information suggests that this risk has changed. If necessary, any additional measures can be implemented via a circular issued by the MFish chief executive under section 58A of the Fisheries (Commercial Fishing) Regulations 2001.

54 Finally, MFish notes that existing domestic seabird mitigation measures are broadly similar to those in the CCAMLR and Macquarie Island toothfish fisheries with regard to offal discharge[60] and use of streamer lines. Line weighting is a requirement both domestically and in the CCAMLR and Macquarie Island toothfish fisheries although domestic line weighting specifications differ to those in the other two fisheries.

Benthic habitats

55 Bottom longline fishing is not considered to have significant adverse effects on benthic habitats. Although bottom trawling for toothfish is permitted MFish is satisfied that existing benthic protection measures will ensure that if fishers engage in bottom trawl fishing its effects can be managed. Existing measures include the benthic protection area initiative, which closed over 30% of New Zealand's EEZ to bottom trawling.

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[59] Live toothfish are exempt from this requirement, primarily to enable tagged toothfish to more easily be returned to the sea

[60] Vessels fishing south of 60˚S in the CCAMLR area are prohibited from discharging any offal or fish discharge

Marine mammals

56 Bottom longline fishing has very low fatal interaction rates with marine mammals (there were no captures reported by observers during the 2006/07 and 2007/08 fishing years). MFish does not expect longline fishing for toothfish to result in increased interactions with marine mammals.

57 The Marine Mammal Operating Procedure will apply if vessels engage in trawl activity for toothfish. This industry-developed Procedure sets out the measures that large trawl vessels should follow to limit marine mammal interactions.

Finfish and shark bycatch

58 MFish is aware that previous fishing activity for toothfish has resulted in proportionally high levels of non-QMS bycatch. The quantity of bycatch varied depending on the areas fished but primarily included rattail species, several ghost shark species and basketwork eels. MFish proposes to monitor this bycatch. If concerns arise, interventions will be considered on a risk-based basis. Such interventions could include QMS entry or additional monitoring. Monitoring shark bycatch is consistent with The New Zealand National Plan of Action for the Conservation and Management of Sharks.

Section 11 considerations

59 In making your decision on sustainability measures for PTO1 you must also have regard to the requirements of section 11 of the Act as follows:

a) Section 11(1)(a): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any effects of fishing on any stock and the aquatic environment. No information about any effects of fishing on any stock or on the aquatic environment, additional to that discussed elsewhere in this paper, is considered relevant to the review of sustainability measures for this stock at this time.

b) Section 11(1)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any existing controls under the Act that apply to the stock or area concerned. No other controls under the Act specifically apply to the PTO1 stock.

c) Section 11(1)(c): Before setting or varying any sustainability measure for this stock, you must take into account the natural variability of the stock. This has been discussed previously.

d) Sections 11(2)(a) and (b): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and you consider relevant. MFish is not aware of any such policy statements, plans or strategies that should be taken into account for this stock.

e) Section 11(2)(c): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and you consider relevant. The boundaries of the quota management area for this stock do not intersect with the Park boundaries. However, the Patagonian toothfish quota management area encompasses the waters of the Hauraki

Gulf Marine Park. The distribution of Patagonian toothfish and its fishery does not intersect with the park boundaries; therefore, MFish considers there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2A)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take account of any relevant and approved fisheries plans. There is no approved fisheries plan in place for any deepwater stock at this time but the implementation of a deepwater fisheries plan is discussed in a later section.

g) Sections 11(2A)(a) and (c): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any conservation or fisheries services, or any decision not to require such services. MFish does not consider that existing or proposed services materially affect the proposals for this stock. No decision has been made to not require a service in this fishery at this time.

Allocating the TAC

60 When setting any TAC, that TAC must be apportioned between the relevant sectors and interests set out under the provisions of section 21 of the Act. Section 21 prescribes that you shall make allowances for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

61 The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors.

Recreational allowance

62 MFish recommends a nil allowance for recreational fishing interests for toothfish. MFish does not have information on the quantities (if any) of toothfish that might be harvested by recreational fishers, but current recreational catch is likely to be zero. Toothfish is unlikely to be accessible to non-commercial fishers given the location and depth where the species occurs.

Customary Maori allowance

63 MFish recommends a nil allowance for customary fishing interests for toothfish. MFish does not have information on the quantities (if any) of toothfish that might be harvested by customary fishers, and is unaware of any information indicating the existence of a customary take of toothfish. Current customary catch is likely to be zero, for the reasons noted in the paragraph above.

Allowance for other sources of fishing-related mortality

64 Some level of fishing-related mortality is likely. If taken by bottom longlining, some hooked fish may be lost to predation by sharks, marine mammals or lice while some fish may be lost from the line near the surface. There is no information available to quantify this mortality.

65 Negligible rates of fish loss and some depredation by lice have been observed in the Ross Sea toothfish fishery, however depredation rates by marine mammals are high in some other jurisdictions. MFish recommends that an allowance equivalent to 1% of the TACC be set for fishing-related mortality for toothfish. This rate was also applied to the

LIN7 stock, over half of which is taken by bottom longlining, when you agreed to increase the LIN7 TAC in 2009.

Total allowable commercial catch

66 Based on the proposed TAC and allowances outlined above, MFish recommends you set a TACC of 49.5 tonnes.

Deemed value rates

67 Under s 75(1) of the Act, you are required to set interim and annual deemed value rates for each quota management stock. Section 75(2)(a) requires you, when setting deemed value rates, to take into account the need to provide an incentive for every commercial fisher to acquire and hold sufficient ACE that is not less than the total catch of that stock taken by the commercial fisher.

68 Toothfish falls under the "all other fish stocks" category as set out in the deemed value review standard (the Standard). For such stocks the goal is to set the deemed value rates on a stock by stock basis using the best available information for the stock.

69 Key considerations for setting deemed value rates include: 1) toothfish is a valuable species with a 2009 export price of around $20 per kg for frozen headed and gutted product; and 2) toothfish is taken almost exclusively as a target species, which means that fishers should be able to accurately fish up to the level of available ACE. Deemed value rates should take these considerations into account and be set at a level that discourages any catching in excess of ACE.

70 An export price of $20.00 per kg converts to an approximate greenweight value of $12.50 per kg. In the IPP, MFish considered this to be an appropriate point at which to set the annual deemed value rate. MFish proposed setting the interim rate at $11.25 per kg (90% of the proposed annual rate) to encourage fishers to balance their catch during the year.

71 MFish also proposed that a differential annual deemed value rate be set that will apply to all catch more than 10% in excess of ACE holdings. The rationale for a differential deemed value rate starting at a relatively low level of catch in excess of ACE was that, as noted above, toothfish is primarily a target species and fishers should not have problems ensuring catch is constrained to the level of available ACE.

72 Three submissions addressed the proposed deemed value rates. Sanford supported MFish's proposals. SeaFIC and TOKM did not and their concerns include:

a) The high deemed value rates are likely to lead to high ACE prices, which may inhibit the development potential of the fishery;

b) The large size of toothfish may make it easy for fishers to unintentionally exceed their ACE holding;

c) Differential deemed value rates should commence at catch in excess of 20% of a fisher's ACE holding; and

d) The rate structure is different to other high value targeted species where the interim rate is 50% of the annual rate and the 'standard' differential deemed value rates apply. [61]

73 MFish considers that SeaFIC and TOKM have raised some valid issues. With regard to the first point it is possible that high deemed value rates will lead to high ACE prices. However, MFish considers the requirement for you to set deemed value rates that

[61] The 'standard' differential deemed value rates consist of a 20% increase to the base annual deemed value rate for each 20% increment in the level of catch above ACE holdings, up to twice the base rate.

provide an incentive for fishers to balance catch with ACE is paramount. Setting lower rates may make some contribution to the development of the fishery but to do so would be inconsistent with the Act as it may not provide sufficient incentive for fishers to balance catch with ACE. MFish considers other aspects of the proposed management framework, such as the ability for fishers implement a controlled research programme under the provision of a special permit, will ensure the development potential of the fishery is realised.

74 MFish agrees that it is possible that the large size of individual fish (>100kg) could result in fishers unintentionally exceeding their ACE holding. Fishing to date has resulted in some very large fish being taken, however such fish are the exception rather than the rule (average weight of fish taken in the EEZ is less than 30kg). MFish envisages that there will only be a small number of fishers in the fishery, each of whom should be able to accurately fish to the level of their ACE by scaling back activity when they are approaching their ACE holding. MFish also notes that you have previously made the decision that toothfish should be added to the Sixth Schedule of the Act. As noted by SeaFIC this will enable fishers to return live toothfish to the sea if they are likely to survive and will assist fishers to fish within their ACE holdings.

75 The issue of large fish is related to SeaFIC and TOKM's point that differential deemed value rates should commence at catch in excess of 20% of a fisher's ACE holding, rather than the 10% proposed by MFish in the IPP. Both parties consider that it could be easy for a fisher to inadvertently exceed their ACE holding by 10% due to the large size of individual fish.

76 As noted previously MFish considers there is likely to be only a small number of fishers in the fishery, each of whom is likely to have a relatively large proportion of the available ACE. These fishers should be able to ensure fishing activity is scaled back when approaching their ACE holding and MFish believes that 10% is an appropriate point for the differential deemed value rate to commence. MFish also notes that a fisher who takes toothfish as bycatch and does not hold any ACE at the end of the fishing year will be charged deemed values at the differential rate regardless of the point at which differential rates commence.

77 With regard to the deemed value rate structure, the Standard (which was approved in 2007) enabled a more flexible approach to be taken to setting deemed value rates. Prior to 2007 interim deemed value rates were usually set at 50% of the annual rate. The Standard provides for interim deemed value rates to be set at any proportion of the annual rate. MFish considers that setting the interim rate for PTO1 at 90% of the annual rate is appropriate and will encourage fishers to balance their catch during the year. MFish also notes that there are several other high value targeted species that do not have the standard differential deemed value rate structure e.g. ling and orange roughy.

78 In summary, MFish acknowledges the points raised by SeaFIC and TOKM but believes the proposed deemed value rates are appropriate. MFish therefore recommends that you set interim, annual and differential deemed value rates for PTO1 for the 2010/11 fishing year as follows:

a) Annual deemed value rate – $12.50 per kg

b) Interim deemed value rate – $11.25 per kg (90% of annual rate)

c) Differential deemed value rate of $20.00 per kg for all catch that is 10% in excess of a fisher's annual catch entitlement

79 MFish notes that deemed value rates for all species are reviewed on an annual basis. This means that the recommended deemed value rates for PTO1 can be revised as appropriate when new information becomes available.

Compliance issues

80 MFish is satisfied that the proposed management options for this fishery are unlikely to result in increased compliance risks. MFish will closely monitor this fishery to ensure compliance with all management arrangements.

Future management

81 The IPP contained a section on additional management measures including research, monitoring and reporting, and the application of a harvest strategy for the stock. This section was included in order to fully inform potential quota owners of how MFish intends to manage this fishery.

82 None of the additional management measures addressed in the IPP require any decisions from you as Minister. However, a brief summary is provided for your information.

Research

83 There are two options available to deliver research on toothfish:

a) Include toothfish in the wider 10 Year Research Programme for deepwater fisheries

b) Permit industry to implement a controlled research programme under the provision of a special permit.

Monitoring and reporting

84 In order to satisfy United States import requirements vessels fishing for toothfish must ensure that their Automatic Location Communicator is configured so that it polls to both MFish and CCAMLR from the time they leave port until the time they return to port at the end of a trip.

85 A recent CCAMLR Conservation Measure requires New Zealand to inspect all fishing vessels carrying toothfish (Antarctic or Patagonian) which enter New Zealand ports. MFish will work with industry to ensure there is awareness of this obligation.

86 In order to collect additional data MFish will work with the fishing industry to develop a modified version of the longline fine scale reporting form used in CCAMLR.

Harvest strategy

87 MFish proposes that the harvest strategy developed for the New Zealand component of this straddling and transboundary toothfish stock will use the same approach in principle as used for the CCAMLR and Macquarie Island toothfish fisheries once the information base improves.

88 Only the submissions from Sanford, SeaFIC and TOKM commented on the additional management measures and all indicated support for those measures. TOKM and SeaFIC emphasised the need for MFish to discuss such measures with quota holders. With regard to collecting additional data SeaFIC recommends that MFish explore with industry the potential of the new electronic reporting of catch effort data to include non-statutory fields for the recording of this data. MFish agrees this is a sensible option to investigate.

89 Full details on the additional management measures have not been provided as part of this FAP. However, MFish will provide the additional information should you require it.

Recommendations

90 MFish recommends that you agree to:

Set a TAC of 50 tonnes for PTO1 and within this set:

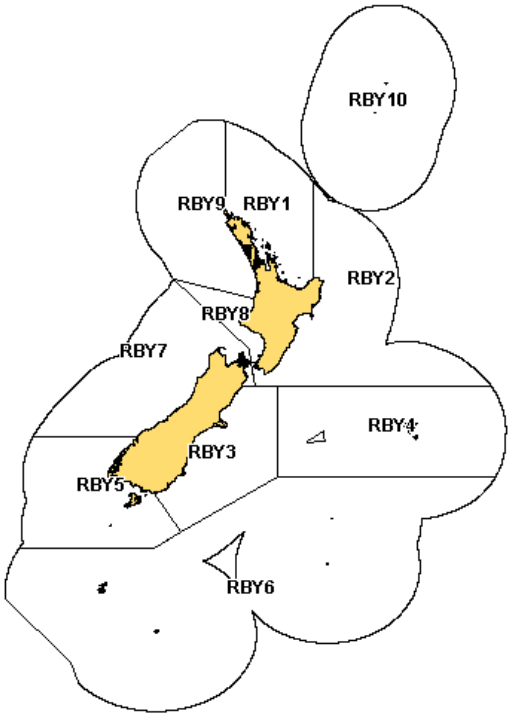
i) a customary allowance of 0 tonnes;
ii) a recreational allowance of 0 tonnes;
iii) an allowance for other sources of fishing-related mortality of 0.5 tonnes; and
iv) a TACC of 49.5 tonnes.

AND

Set an annual deemed value rate of $12.50 per kg, an interim deemed value rate of $11.25 per kg, and the differential deemed value rate detailed in the table below for PTO1 from 1 October 2010:

Catch in excess of ACE holdings (%)	Recommended deemed value rate for PTO1 ($/kg)
10	$20.00

RUBYFISH (RBY 4)



Executive summary

1 Rubyfish was introduced to the quota management system (QMS) on 1 October 1998 and since then RBY4 has been managed as a low knowledge stock.[62] RBY4 is predominantly caught as bycatch in trawl fisheries targeting alfonsino, and catches have varied from year to year.

2 The total allowable catch (TAC) and total allowable commercial catch (TACC) in RBY4 are both currently set at 6 tonnes. Both were increased from 3 tonnes to 6 tonnes from 1 October 2006. Despite this increase, the TACC has still been over-caught, by an average of 16.1 tonnes over the last three years. The maximum catch taken from this stock in a single year is 37 tonnes.

3 MFish is proposing two options for your consideration:

a) Option 1: The RBY4 TAC is increased from 6 to 6.5 tonnes. Under Option 1 the TACC remains unchanged at 6 tonnes and an additional 0.5 tonne allowance for other sources of fishing related mortality is included in the TAC.

b) Option 2 (MFish recommended option): Increase the RBY4 TAC from 6 to 19 tonnes and the TACC from 6 to 18 tonnes. Under Option 2 an allowance of 1 tonne is included in the TAC to account for other sources of fishing related mortality.

c) There is little information with which to reliably estimate the stock status of RBY4. However, the increase proposed under Option 2 is considered likely to ensure continued sustainability of the stock. Catches will be retained at nominal[63] levels, but the proposed increase will allow fishers to balance their

[62] MFish considers that a low knowledge stock is a stock with a nominal TAC in place, which is not the focus of a research or monitoring programme.
[63] A nominal catch limit refers to a catch limit that is set at a low level, reflecting that we have very little information on the stock status.

bycatch with their annual catch entitlement (ACE) rather than continuing to pay deemed values on the small volumes of bycatch that are being taken.

4 If you decide to retain the existing TAC (Option 1), MFish recommends that you increase this TAC by 0.5 tonnes to make an allowance for other sources of fishing related mortality.

5 MFish has also reviewed the deemed value rates for RBY4 and recommends amendments under both of the proposed management options. MFish considers that the current annual rate of $0.42 per kg, and the current interim rate of $0.21 per kg remain appropriate, provided standard differential deemed value rates are also introduced, as detailed in Table 1 below.

Table 1: Recommended differential deemed value rates for RBY4

Recommended differential rates	
Catch in excess of ACE holdings (%)	Recommended RBY4 deemed value rates ($ per kg)
20	0.50
40	0.59
60	0.67
80	0.76
100	0.84

Background information

6 Rubyfish occur at depths ranging from 50 to at least 800 metres, and commercial catch data indicate the species is most abundant between 200 and 400 metres. Ageing data suggest this species is long-lived and slow-growing. RBY4 is predominantly harvested as bycatch in the alfonsino deepwater trawl fishery.

7 RBY4 is a low knowledge stock that was introduced to the QMS on 1 October 1998 with a nominal TAC and TACC of 3 tonnes. Deemed value rates were also set at low levels to encourage reporting of RBY4 bycatch. Annual catch levels have varied from 0 to 37 tonnes per annum, and show a slight increasing trend.

8 The TAC and TACC were increased to 6 tonnes as part of MFish's review of low knowledge stocks for 1 October 2006. This increase was intended to resolve the issue of over-catch that was taking place in RBY4, but catches have continued to increase by small volumes.

Consultation

9 Your decision whether to retain the status quo or increase the RBY4 TAC is a decision under section 13 of the Fisheries Act 1996 (the Act) and therefore the consultation requirements of section 12 apply. Also, in respect of your decision whether or not to adjust the TACC for RBY4, the consultation requirements set out in section 21 (2) apply.

10 In line with the requirements of sections 12 and 21, consultation on the initial position paper (IPP) was undertaken with such persons or organisations representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Maori, environmental, commercial and recreational interests.

11 MFish followed the standard consultation process for the October sustainability round. The IPP was posted on the MFish website and stakeholders were alerted to this through correspondence sent to approximately 350 companies, organisations and individuals.

12 MFish consulted on the two options that are set out in Table 2.

Table 2: Consultation options for RBY4

	Option 1	Option 2 (Recommended option)
TAC (t)	6.5	18
Allowance for customary Maori (t)	0	0
Recreational allowance (t)	0	0
Other sources of fishing related mortality (t)	0.5	1
TACC (t)	6	19

Submissions received

13 Submissions were received from the following:

a) Environment and Conservation Organisations of NZ Inc (ECO)

b) Greenpeace Aotearoa New Zealand (Greenpeace)

c) Mark Clayson

d) New Zealand Seafood Industry Council (SeaFIC)

e) Royal Forest & Bird Protection Society (Forest & Bird)

f) Sanford Limited (Sanford)

g) WWF – New Zealand (WWF)

h) United Fisheries Limited (UFL)

All submissions are attached as Volume Two to this paper for your reference.

14 ECO, Greenpeace and Forest & Bird oppose any increase to the RBY4 TAC. Their submissions state there is no information available to show that the proposed increase will be sustainable.

15 In addition, ECO and Forest & Bird recommend that research be carried out to collect further information on this stock before any TAC decisions are made. As such, Greenpeace submits that the proposed increase is guesswork and strongly recommends the use of science in fisheries management.

16 Mark Clayson does not agree with MFish's proposals to increase any TACs and TACCs in the near future. He submits that catch data indicates the numbers of fish caught in the New Zealand exclusive economic zone is in decline.

17 SeaFIC, Sanford and UFL support the proposed increase to the RBY4 TAC, and recognise that this stock has been continually over-caught since 2001.

18 UFL are also supportive of MFish's proposal to introduce differential deemed value rates in RBY4. In contrast, SeaFIC do not support introduction of differential deemed value rates, due to RBY4 being an unavoidable bycatch with significant variation in catch rates.

Rationale for management intervention

19 Despite the increase in 2006, the RBY4 TACC continues to be exceeded, with catch levels greater than the available ACE in 7 of the previous 8 fishing years. This is likely due to the combination of a nominal TAC and the repeated occurrence of small rubyfish bycatch events during trawling for other target species.

20 Given that most rubyfish is taken as bycatch, it is not possible to calculate a reliable catch per unit effort (CPUE) index. Further, the RBY4 that is caught in the Chatham Rise trawl survey is taken in quantities that are too low to provide a reliable series of abundance estimates. Consequently, there is little information available to determine the current status of the stock. This is reflected in the submissions received from environmental groups, indicating concern with the lack of information on which the recommended TAC increase is based.

21 However, although the TACC has been exceeded in previous years, MFish considers that current RBY4 catches are low enough to remain within the acceptable range for low knowledge stocks. MFish considers that continued removals at current catch levels will likely ensure the continued sustainability of the stock. Setting the TACC in line with current harvest levels will also help ensure fishers have sufficient ACE to balance their RBY4 bycatch.

Management measures proposed

22 Given the current status of the RBY4 stock cannot be reliably determined, MFish recommends that you implement Option 2 and introduce a modest increase of 12 tonnes to the nominal RBY4 TAC.

23 MFish proposes to base this increase on the same rationale that was used to set TACs and TACCs during the 2006 review of low knowledge stocks. This approach uses the average landings from the stock over the previous seven years and applies an additional 10% to account for apparent distortions in catch history. Applying this approach would result in the TAC being increased to 19 tonnes. Should you consider this increase inappropriate Option 1 is also available to you, which retains the existing catch limit of 6 tonnes.

24 As part of both the proposed management options, MFish recommends that you introduce an additional allocation that will account for other sources of fishing related mortality. MFish also recommends that you introduce standard differential deemed value rates under both proposed options. It is expected that standard differential rates will provide the correct incentives to ensure that fishers acquire ACE to balance all RBY4 catch during the 2010-11 fishing year and do not exceed the TACC.

25 MFish's recommendation is unchanged from the proposal in the IPP. MFish has acknowledged the issues raised in the submissions but considers a 19 tonne TAC is appropriate and is likely to ensure the sustainability of the stock.

Assessment of Management Measures

Setting the TAC – Section 13

26 The current status of RBY4 in relation to the biomass that would support the maximum sustainable yield (B_{MSY}) is unknown and is unable to be reliably estimated using the best available information. In such circumstances, you may set a TAC under s 13(2A) of the Fisheries Act.

27 Under section 13(2A), you must:

a) Not use the absence of, or any uncertainty in, that information as a reason for postponing or failing to set a total allowable catch for the stock; and

b) Have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock; and

c) Set a TAC –

a) using the best available information; and

b) that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield.

28 There is no information to suggest the current level of commercial catch in RBY4 is unsustainable. However, the TAC increase recommended under Option 2 is expected to retain catches at a level that is likely to be sustainable. In addition, increasing the TAC will reduce the need for fishers to pay deemed values for over-catch of RBY4. RBY4 deemed value payments have averaged $6,911 over the last three fishing years.

29 Section 13(2A) also requires that you have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock. As RBY4 is primarily caught as bycatch, it is unlikely that increasing the TAC will result in any change to the current fishing effort on the Chatham Rise. It is therefore unlikely the proposed increase will have any additional impact on interdependent fishstocks.

30 The information available on the biological characteristics of the stock suggests that it is long-lived and slow growing, which means a cautious TAC is appropriate. Retaining a nominal TAC of 19 tonnes is considered to be sufficiently cautious. There is no information available on the environmental conditions that affect the stock and therefore it is not possible to assess the impact of the proposed TAC increase in this area.

31 Under section 13(3) of the Act, you must have regard to the relevant social, cultural and economic considerations when determining an appropriate way and rate to move the stock towards or above the maximum sustainable yield. RBY4 is a low value species, most of which is taken as bycatch. In addition, as MFish's recommendation would bring the TACC in line with current catch levels, additional revenue for fishers from this increase is unlikely. MFish considers the proposed increase will allow quota holders and fishers to balance catch with ACE, rather than paying deemed values on their bycatch.

32 There is no customary or recreational allocation for RBY4 and therefore there are no recreational or customary utilisation factors that require your consideration when setting the TAC.

Environmental considerations

33 Section 9 of the Act requires that you take into account that associated or dependent species be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

34 Given that the majority of RBY4 catch is taken as bycatch in other target fisheries, it is unlikely that increasing the TACC will result in any change to the current effects of fishing on the aquatic environment. However, a more detailed assessment of the potential impacts of the recommended increase is set out below.

Benthic impact

35 Almost 50% of RBY4 is taken by bottom trawl. Given that RBY4 is predominantly caught as bycatch as part of current trawl effort, it is considered unlikely that increasing the TAC will result in an increase in bottom trawling effort.

36 The effects of bottom trawling are managed through area closures, and two initiatives are in place. In 2001, the Minister regulated a trawl closure covering 18 seamounts of varying size and depth. A further 17 areas of varying sizes were closed by the Minister in 2007 through the benthic protection area (BPA) initiative. Four BPAs and three seamount closures are found within RBY4.

Fish bycatch

37 RBY4 is predominantly caught as a bycatch in other target fisheries, including alfonsino. MFish considers that increasing the TAC under Option 2 is unlikely to result in an increased level of fish bycatch.

Marine mammals

38 Given RBY4 is a bycatch fishery and increasing the TAC is unlikely to result in increased overall fishing effort, MFish considers the recommended increase is unlikely to result in additional marine mammal captures.

39 In addition, RBY4 is harvested mainly by large deepwater factory vessels that are >28m in length. All these vessels follow the best practice guidelines that are described in the industry-developed marine mammal operating procedure (MMOP). The MMOP sets out measures that vessels should follow to limit interactions with marine mammals.

Seabirds

40 Given that RBY4 is predominantly taken as bycatch, MFish considers it unlikely that increasing the TAC will result in increased fishing effort and therefore any additional seabird captures. Further, mandatory measures that address seabird captures are in place across the deepwater fleet, which includes those vessels that harvest RBY4 as bycatch. These measures include the requirement that all trawlers deploy bird mitigation devices when fishing gear is in use.

41 In addition, non-regulatory management measures known as vessel management plans (VMPs) apply in the RBY4 fishery. VMPs set out the onboard practices that vessels must follow to avoid seabird interactions, including offal management and good factory cleanliness. MFish currently monitors vessel performance against VMPs

and works in collaboration with the Deepwater Group Ltd to rectify any issues that arise during the fishing season. This practice will continue during the 2010-11 fishing year.

Section 11 considerations

42 In making your decision on sustainability measures for RBY4 you must also have regard to the requirements of section 11 of the Act as follows:

a) Section 11(1)(a): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any effects of fishing on any stock and the aquatic environment. No information about any effects of fishing on any stock or on the aquatic environment, additional to that discussed elsewhere in this paper, is considered relevant to the review of sustainability measures for this stock at this time.

b) Section 11(1)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC and a TACC. No other controls under the Act specifically apply to the RBY4 stock.

c) Section 11(1)(c): Before setting or varying any sustainability measure for this stock, you must take into account the natural variability of the stock. This has been discussed previously.

d) Sections 11(2)(a) and (b): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and you consider relevant. MFish is not aware of any such policy statements, plans or strategies that should be taken into account for this stock.

e) Section 11(2)(c): Before setting or varying any sustainability measure for any deepwater stock, you must have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and you consider relevant. The boundaries of the quota management area for this stock do not intersect with the Park boundaries. Therefore, MFish considers there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2A)(b): Before setting or varying any sustainability measure for any deepwater stock, you must take account of any relevant and approved fisheries plans. There is no approved fisheries plan in place for any deepwater stock at this time but the implementation of a deepwater fisheries plan is discussed in a later section.

g) Sections 11(2A)(a) and (c): Before setting or varying any sustainability measure for any deepwater stock, you must take into account any conservation or fisheries services, or any decision not to require such services. MFish does not consider that existing or proposed services materially affect the proposals for this stock. No decision has been made to not require a service in this fishery at this time.

Allocating the TAC

43 The TAC must be apportioned between the relevant sectors and interests as required under sections 20 and 21 of the Act. Section 21 prescribes that allowances are made for non-commercial Mäori customary interests, recreational fishing interests and for any other sources of fishing related mortality, before you set the TACC.

44 There is no information to suggest any customary or recreational harvest of rubyfish, and MFish does not consider these sectors have an active interest in the fishery. Therefore, MFish recommends retaining nil allowances for both the customary and recreational sectors.

45 MFish also recommends the introduction of a small allocation for other sources of fishing-related mortality. No information specific to RBY4 is available, so MFish has used the same approach as is taken with similar long lived and slow-growing species that inhabit the Chatham Rise. Allocations for other sources of fishing related mortality for orange roughy and oreo stocks are equivalent to approximately 5% of the TACC. MFish recommends that an allowance of 5% of the TACC is included to account for other sources of fishing related mortality.

46 Under Option 1, the introduction of a nominal allocation for other sources of fishing-related mortality would result in the RBY4 TACC remaining at 6 tonnes and the TAC being increased to 6.5 tonnes. Under Option 2 the TAC would be increased to 19 tonnes, with a 1 tonne allowance for other sources of fishing related mortality and a TACC of 18 tonnes.

Deemed values

47 Section 75 of the Act requires that you set deemed value rates for every stock in the QMS. This is to ensure there are appropriate incentives for fishers to acquire or maintain sufficient ACE so that fishing effort does not result in catch limits being exceeded.

48 The current deemed value rates are set as follows:

a) The annual deemed value rate is $0.42 per kg

b) The interim deemed value rate is $0.21 per kg

49 The Deemed Value Standard recommends setting the annual deemed value rate between the ACE transaction price and the landed price for that stock. The year-to-date ACE transaction price averages $0.19 per kg and the landed price for RBY4 in the 2009-10 fishing year was $0.56 per kg. Based on this information, MFish recommends the current annual and interim deemed value rates be retained.

50 There are currently no differential deemed values in RBY4. Differential deemed values would provide an increasing economic disincentive for fishers to exceed their RBY4 ACE allocation. To minimise future RBY4 over-catch, MFish considers that the correct economic incentives must be used to maintain catch within the TACC, irrespective of whether you choose to retain the status quo (Option 1) or choose to increase the catch limit (Option 2).

51 MFish recommends that you implement standard differential deemed value rates as per Table 3 below. If the TACC continues to be over-caught, MFish will review the deemed values for the 2011-12 fishing year.

52 MFish recommends setting the deemed value rates for RBY4 as follows:

a) Retain the annual deemed value rate at $0.42 per kg

b) Retain the interim deemed value rate at $0.21 per kg

c) Introduce differential deemed value rates as per Table 3:

Table 3: Recommended differential rates for RBY4

Recommended differential rates	
Catch in excess of ACE holdings (%)	Recommended RBY4 deemed value rates ($ per kg)
20	0.50
40	0.59
60	0.67
80	0.76
100	0.84

Compliance issues

53 The TAC increase proposed under Option 2 is unlikely to result in any increase in fishing effort on the Chatham Rise. MFish therefore considers there are unlikely to be any resulting compliance implications from the proposed increase.

54 However, the introduction of differential deemed value rates, recommended under both options, may result in increased discarding of RBY4, as fishers try to avoid paying the higher deemed value rate on their over-catch. MFish considers there is a greater risk that this will occur if you choose to retain the existing TAC (Option 1). Irrespective of your decision MFish will continue to monitor fishing behaviour throughout the year to assess if discarding is an issue.

Future management

55 Given the variability of harvest levels, and the small volume of RBY4 generally taken in each bycatch event, there is little information available to support more proactive management. In addition, the small volume of catch taken from this stock precludes active research into stock status. The increased observer coverage proposed under the 10 Year Research Programme for Deepwater Fisheries may allow MFish to collect reliable catch data, although biological sampling is not planned for this stock. This information may contribute to management in future years.

56 MFish, in collaboration with Industry and environmental stakeholders, has developed a National Fisheries Plan for Deepwater and Middle-depth Fisheries (the National Deepwater Plan). Rubyfish has not yet been included in the National Deepwater Plan, but is scheduled to be included in the oreo chapter as a key bycatch stock.

Recommendations

57 MFish recommends that, for the fishing year commencing on 1 October 2010, you agree to either:

Option 1 – Increase the TAC to 6.5 tonnes

a) Increase the existing RBY4 TAC from 6 to 6.5 tonnes

b) Introduce an allowance of 0.5 tonnes for other sources of fishing-related mortality; and

c) Retain the existing TACC at 6 tonnes

OR

Option 2 – Increase the TAC to 19 tonnes (MFish recommendation)

i. Increase the RBY4 TAC from 6 to 19 tonnes

ii. Introduce an allowance of 1 tonne for other sources of fishing-related mortality; and

iii. Increase the TACC from 6 tonnes to 18 tonnes.

AND

Agree to set the following deemed value rates for RBY4 for the 2010/11 fishing year:

a) Retain the annual deemed value rate at $0.42 per kg

b) Retain the interim deemed value rate at $0.21 per kg

c) Introduce differential deemed value rates as per Table 4:

Table 4: Recommended differential rates for RBY4

Recommended differential rates	
Catch in excess of ACE holdings (%)	Recommended RBY4 deemed value rates ($ per kg)
20	0.50
40	0.59
60	0.67
80	0.76
100	0.84

Deemed Value Round

REVIEW OF DEEMED VALUE RATES FOR 1 OCTOBER FISH STOCKS

Executive Summary

1 This paper sets out the Ministry of Fisheries (MFish) recommendations for the deemed value rates for selected fish stocks for the fishing year commencing 1 October 2010.

2 Under section 75(1) of the Fisheries Act 1996 (the Act) you are required to set interim and annual deemed value rates for each quota management stock. Section 75(2)(a) requires you, when setting deemed value rates, to take into account the need to provide an incentive for every commercial fisher to acquire and hold sufficient annual catch entitlement (ACE) that is not less than the total catch of that stock taken by the commercial fisher. Section 75(2)(b) sets out the factors you may have regard to when setting deemed values. Section 75(2) forms the basis of the analysis that has been produced for the stocks under review.

3 MFish developed a Deemed Value Standard in 2007 to set out a process for managing the setting, reviewing and amendment of deemed value rates. This process has been used to review the deemed value rates as part of this sustainability round. MFish is currently reviewing this standard and intends to publically consult on any proposed changes later in 2010.

4 The Deemed Value Standard identifies a specific set of criteria that indicate if a fish stock should be considered for a deemed value review. Table 1 summarises MFish recommendations for deemed value changes (if recommended).

Table 1: Recommended deemed value rate changes for 1 October 2010 fishing year

		Summary of Recommended deemed value changes (if any)		
Species Name	**Fish Stock Reviewed**	**Annual**	**Interim**	**Differential**
Cardinalfish	CDL3	Increase to $0.52	Increase to $0.26	Introduce non-standard rate at 120% ACE holdings
Cardinalfish	CDL4	No change	No change	Introduce non-standard rate at 120% ACE holdings
Hake	HAK1 and HAK4	Increased to $1.60	Increased to $0.80	Adjusted to match annual rate
Ribaldo	RIB7	No change	No change	Increased backstop to $2.50
Trevally	TRE1	Increased to $1.25 per kg	Increased to $0.70 per kg	Adjusted to match annual rate
Rough Skate	RSK8	No change	No change	No change
Smooth Skate	SSK8	No change	No change	No change
Snapper	SNA8	No change	No change	No change
Kingfish	KIN8	No change	No change	No change
Red Gurnard	GUR3 and GUR7	No change	No change	No change

5 MFish issued a Initial Position Paper (IPP) on 21 June 2010 that included proposals for deemed value rate changes for all the above stocks. After five weeks consultation, a range of views on the proposed deemed value rate changes had been received from

stakeholders. MFish has taken these views into consideration and where appropriate has incorporated them into the discussions on recommended deemed value rates for your consideration.

6 You are not limited to choosing the deemed value rates recommended in this paper; rather you can set the deemed value rates at any level that you consider will best meet your obligations under the Act. You can also choose to leave the deemed value rates unchanged, provided you are satisfied that this meets your statutory obligations. However, MFish considers the proposed adjustments to the deemed value rates for the stocks listed in this advice paper are appropriate at this time.

7 In addition to the stocks set out in tables 1, above, fish stocks being reviewed as part of the 1 October sustainability round and quota management system introduction processes will also have their deemed value rates reviewed. These stocks are included in the sustainability round section of the wider Final Advice Paper (FAP).

8 All remaining October stocks were also reviewed against the criteria set out in the Deemed Value Standard but did not meet the criteria and no further review is warranted at this time.

Consultation

9 Twelve submissions were received from the following stakeholders (copies of the original submissions can be found in Appendix 1):

a) Aotearoa Fisheries Ltd. (AFL)

b) Challenger Finfisheries Management Company Ltd. (Challenger)

c) Compass Rose Fishing Ltd. (CRF)

d) Egmont Seafoods Ltd. (ESL)

e) Independent Fisheries Ltd. (Independent)

f) NZ Federation of Commercial Fishermen Inc. (NZFCF)

g) NZ Recreational Fishing Council (NZRFC)

h) Ocean Fisheries Ltd. (Ocean Fisheries)

i) Option4, the Hokianga Accord and NZ Sport Fishing (Option4 et al.)

j) Sanford Ltd (Sanford)

k) Te Uri O Hau Settlement Trust (Te Uri O Hau)

l) The New Zealand Seafood Industry Council Ltd (SeaFIC)

10 Most of the submissions relate to specific stocks and the proposed deemed value rates for these stocks. Those stock-specific comments are identified and addressed in appropriate sections below.

11 A number of submitters also commented on broader issues related to the deemed value process. Those broader comments are addressed in the Background, Process, and Rationale sections, as appropriate below.

12 MFish notes that there were also a number of generic, non-IPP specific comments made by some submitters, such as recommending stocks for a future deemed value rate and/or total allowable commercial catch (TACC) review.

Background

13 The purpose of the deemed value framework is to provide an incentive for fishers to acquire sufficient ACE to balance against catch. The catch balancing regime is a key fisheries management tool contributing to both sustainability and utilisation objectives. The sustainability objectives are achieved when deemed value rates encourage fishers to balance catch with available ACE and in so doing constrain harvesting to the TACC. Incorrectly set deemed value rates have contributed to catches in excess of the TACC in some fisheries in the past, which may have sustainability implications.

14 Utilisation objectives are achieved by providing flexibility for commercial operators to manage unexpected and small overruns in ACE holdings by allowing periodic rather than continuous balancing. In the long term, the sustainability implications that may result from overfishing could result in TACC reductions, which also impact on utilisation objectives.

15 ESL noted that deemed values might provide the incentive to acquire ACE but practically it is not always possible to obtain due to TACCs not being set at the 'correct level' and the quota or ACE owners not acting 'responsibly'. MFish notes that the setting of TACCs is outside the deemed value rate review process and that MFish has no mandate to influence the market trading of quota and ACE.

Process

16 The 2007 Deemed Value Standard sets out a process for reviewing and adjusting deemed value rates. This process has been followed for the stocks outlined in this FAP. All quota management system (QMS) stocks with a fishing year beginning 1 October were assessed against the following criteria as set out in the Deemed Value Standard:

a) Catch in excess of a TACC;

b) Catch in excess of an individual's ACE holdings and deemed values have been invoiced but ACE has remained unused;

c) Changes to the port price of a stock (Note that "2010-11 port price" is data collected in 2010 that is used for setting 2010-11 cost recovery levies);

d) Direct request from SeaFIC on behalf of quota owners;

e) Recent changes to a stock's TACC or the TACC of key bycatch stocks;

f) Stock has recently entered the QMS and the initial deemed value rates were set using limited information.

17 Following an assessment of the stock's performance against the criteria described above an information sheet was prepared. MFish also sent letters to identified individuals and commercial stakeholder organisations (CSOs). This was done to help identify fish stocks that could require a deemed value rate review and to get additional ACE and landed price data.

18 This information was analysed to determine why deemed value rates for some stocks may not be effective. The information sheets described above were used to answer questions such as:

a) Likely reasons for the TACC over-catch/landings in excess of ACE;

b) An assessment of the bycatch fisheries associated with the stocks under review (to ensure any changes to the target stock deemed value

rates do not have an adverse effect on the sustainability of bycatch stocks);

c) Likely risk that the deemed value rate may not provide the appropriate incentive to balance catch with ACE; and

d) Impact of changes in market price and/or structure for the fish product/species under review.

19 Initial analysis of all stocks was made available to the members of the deemed value review group[64] to review and make comment on. If a stock met one of the review criteria and any member of the review group considered that a deemed value review was appropriate, the stock was included in this sustainability round.

20 If a deemed value rate adjustment was considered appropriate, the following information sources were used to determine what new deemed value rate should be proposed. This information was made available to all participants in the deemed value rate review group:

a) Port price;

b) ACE trading price;

c) Export prices as a proxy for market values (where appropriate) and other information on price;

d) Bycatch ratios (where appropriate);

e) Cost recovery levy rates;

f) Past deemed value payments; and

g) Other information about the fish stocks in question.

21 The Act requires that changes to annual, interim and differential deemed value rates will take effect on the first day of each fishing year. MFish notes that there are inherent delays in the deemed value rate setting process. Deemed value rates can only be changed once per year. The deemed value rates proposed in this FAP seek to maintain the appropriate incentives for future conduct instead of only asking if the incentives were inappropriate in the past.

22 In their submission, SeaFIC noted that the 'process and procedure has again been mis-represented by the Ministry in the IPP description of the process and rationale but at least the IPP content is more consistent with the Minister's approvals and more cognisant of fisheries management realities'. MFish notes that this issue continues to be a point of disagreement between SeaFIC and MFish, however, MFish considers it is following the process set out in the Standard, noting the issues encountered with current port prices (see comments in Rationale section, below).

23 A number of submitters considered that the deemed value process is 'flawed'; it fails to allow for (or constrain) commercial catch and is in need of review. MFish notes that it is currently reviewing the Deemed Value Standard and intends to publically consult on any proposed changes later in 2010. In addition, MFish is committed to working with all stakeholders to improve the deemed value process during this review period.

24 MFish notes there is a separate process and separate statutory criteria for setting TACs and TACCs. The deemed value process is designed to ensure integrity of the TACC once it has been set.

[64] Made up of MFish and SeaFIC staff members

Rationale for management options

General principles for deemed value rate setting

25 Under s 75(1) of the Act you are required to set interim and annual deemed value rates for each quota management stock.

26 Under s 75(2)(a) you must take into account the need to provide an incentive for every commercial fisher to acquire or maintain sufficient ACE in respect of each fishing year that is not less than the total catch of that stock taken by that commercial fisher. This covers incentives under at least four circumstances:

a) First, to provide an incentive to balance catch with ACE when ACE is available. That is, fishers should not use deemed values instead of ACE when ACE can be acquired on the open market. Paying deemed values when ACE remains unused is not consistent with s 75(2)(a). Balancing with ACE is the preferred catch balancing method.

b) Second, to provide an incentive to keep the catch level to the amount of ACE available in the fish stock. That is, fishers should not use deemed values as a way of exceeding the TACC for any given fish stock. This helps ensure that the sustainability of the fish stock is not put at risk by fishing on deemed values.

c) Third, to provide an incentive not to misreport catch as being taken from a different fish stock to take advantage of lower deemed value rates. When such misreporting occurs, the fisher fails to acquire ACE for the fish stock from which the fish were actually caught. This can undermine the sustainability and utilisation of fish stocks and distorts the information used to make fisheries management decisions. Misreporting is an offence under the Act.

d) Fourth, to provide an incentive not to illegally discard catch instead of paying the deemed value or acquiring ACE. When a fisher illegally discards, they fail to acquire ACE for the fish stock from which the fish were caught. Illegal discarding undermines the sustainability of fish stocks and is an offence under the Act.

27 As a general guide to setting deemed value rates under s 75(2)(a), MFish considers that a deemed value rate between ACE price and landed price[65] generally provides the correct incentives. MFish considers that in the majority of situations, the following actions will create the correct incentives for commercial fishers to acquire ACE to cover their catch:

a) When deemed value rates are below ACE price: Increase deemed value rates to a level between ACE price and landed price to provide the incentive to balance catch with ACE. There are transaction costs associated with finding, buying and registering transfers of ACE. Deemed values should be sufficiently above ACE price, such that fishers would not routinely pay deemed values to avoid those transaction costs.

b) When deemed value rates are above landed price: Decrease deemed value rates to a level between ACE price and landed price to provide an incentive not to illegally discard.

[65] MFish plans to use port price as a proxy for landed price

28 Section 75(2)(b) outlines other factors that you may have regard to when setting interim and annual deemed value rates. Section 75(2)(b) says that you may have regard to:

a) The desirability for commercial fishers to land catch for which they do not have ACE; and

b) The market value of ACE for the stock; and

c) The market value of the stock; and

d) The economic benefits obtained by the most efficient commercial fisher, licensed fish receiver, retailer, or any other person from the taking, processing or sale of fish, aquatic life, or seaweed, or of any other fish, aquatic life, or seaweed that is commonly taken in association with fish, aquatic life, or seaweed; and

e) The extent to which catch of that stock has exceeded or is likely to exceed the TACC for the stock in any year; and

f) Any other matters that you consider relevant.

29 In their submission, SeaFIC pointed out that in February 2010, MFish undertook a new survey of port prices and that the new survey format resulted in improved levels of return and a more robust indication of price levels. Further, SeaFIC noted that they see no reason why those prices could not be used to inform the 2010/11 deemed value rate settings. Challenger and ESL also noted issues with dated port prices.

30 In the IPP MFish based the analysis on the 2009/10 port price information because the 2010/11 data had not yet been finalised. This information is now available and has been used to inform the stock specific deemed value analysis in the sections below. In addition, to support the port price data, MFish routinely asks for updated price data in both its preliminary letter to CSOs and other interested parties and also in the IPP.

31 MFish notes that this year, participants were asked for their best estimate of the current prices (including ACE) for 'arm's length transactions'. Therefore, when estimating port prices, it is necessary to deduct ACE price from the new estimate of 'arm's length transactions'[66] in order to gain a true estimate of the port price.

32 In their submission, Sanford notes that they do not support low deemed value rates that allow fishers to economically prosper from continuing to catch fish without ACE and that deemed value rates should be substantially increased until there is no economic benefit to be gained from overfishing. In addition, NZRFC suggested that in order to ensure ACE is not exceeded, all deemed value rates should be set at a minimum of three times the port price.

33 MFish notes NZRFC and Sanford's concerns, but considers that the deemed value process is fulfilling its statutory requirement by removing economic incentive for taking catch without ACE while reducing the risk of discarding.

Deemed value rates should exceed ACE price by the margin of transaction costs

34 If ACE price is close to the deemed value rate there may be an incentive for fishers to pay the deemed value instead of acquiring ACE to balance their catch. This is due to the transaction cost involved in making an ACE trade. Currently it costs $13.50 to electronically register an ACE trade with FishServe. There is also the time it takes to

[66] This is a new methodology used by the MFish finance team in order to set cost recovery levies.

find an appropriate package of ACE and possibly a brokerage fee (if ACE is purchased through a broker). MFish understands the total transaction costs are approximately $100.00 per ACE transaction.

35 MFish considers that in setting deemed values, it is appropriate to seek to avoid the transaction cost of small ACE trades. The question is: at what level of landings should fishers be expected to seek ACE rather than using the convenient option of paying deemed values? MFish suggests that when a fisher has one tonne of landings to cover with ACE or deemed values, the incentive should be to acquire ACE. If $100.00 in transaction costs are spread over 1000 kilograms, the transaction cost would be $0.10 per kg. This leads MFish to recommend that deemed value rates should usually exceed ACE price by about $0.10 per kg. This would also imply that the lowest deemed value should be approximately $0.10 per kg.For this reason MFish recommends that you continue to set deemed values by a margin above ACE prices that covers transactions costs. Avoiding incentives to misreport

36 As discussed above, MFish's view is that incentives to misreport are a factor that fall within the ambit of s 75(2)(a). When two adjacent Quota Management Areas (QMAs) for the same species have substantially different deemed value rates, there may be an incentive to misreport origin and attribute the catch to the area where the lower deemed value rates prevail. MFish notes that this is a real issue when vessels fish across more than one QMA on one trip and MFish's view is that you can consider the impact of differences in deemed value rates across QMAs in your decisions.

37 For most species, prices across adjacent QMAs are likely to be similar, because arbitrage in markets will result in movements of fish to equalise prices. Because the upper bound on deemed value rates in most circumstances is landed price, the upper bound for adjacent QMAs will often be similar. Thus, setting similar deemed value rates across different QMAs is often likely to be feasible.

38 MFish considers that there are reasons to consider more uniform deemed values across QMAs, but that these reasons must be weighed against other considerations. MFish acknowledges that there are regional differences in the prices of some species and that these differences must be considered in setting deemed values.

39 NZRFC submits that when setting deemed value rates, the ability of commercial fishers to truck fish to another QMA area where the deemed value rate could be lower should be considered. MFish notes NZRFC's concerns, and where appropriate, does recommend changes to deemed value rates in neighbouring FMAs. For example, in the TRE1 discussion below, MFish is recommending such a change to discourage misreporting.

Principles for constraining bycatch species

40 An important exception arises with respect to MFish's position that deemed value rates should generally be set below landed price. That exception arises when:

a) A species is a bycatch in a multi-species fishery, such as a mixed trawl fishery, and

b) The catch of that bycatch species constrains the ability of the fishing fleet to capture other target species.

41 In this circumstance, the bycatch species is said to have a "shadow value" greater than landed value that reflects its value in permitting greater catches of other species in the overall fisheries complex. When the shadow value is high, the ACE value that will

constrain catch to the TACC can exceed the landed value. In this instance, the deemed value rate may need to exceed the landed value.

42 When the ACE price and the deemed value rates are above the landed value, incentives to illegally discard are created. This may be an inevitable result of providing appropriate incentives under s 75(2)(a) for fishers to acquire ACE to cover their catches. How to balance incentives to illegally discard against the incentives to fish on deemed values is the most difficult deemed value advice that MFish must provide to you. It may be necessary to rely on compliance and enforcement tools to deter illegal discarding.

High value single species fisheries

43 Previous Ministers have decided that the appropriate incentive for "high value single stocks", where the nature of the harvest activity means that any breach of the TACC is likely to be deliberate, is to provide a very strong incentive to catch only the amount for which fishers have ACE. This has been accomplished by setting the annual deemed value rate at approximately twice the landed price. A fisher would suffer a large loss on any catches in excess of ACE. By setting the deemed value rate at twice the landed price, it is unlikely that even if prices increase during a fishing year that any incentive would arise to land catch in excess of ACE. This is consistent with s 75 (2) (a) as it provides a strong disincentive against catches in excess of ACE. This incentive has been applied to all spiny rock lobster (CRA) and paua (PAU) stocks.

Differential deemed value rates

44 Differential deemed value rates are set under s 75 (4) which states:

45 Section 75 (4) - The Minister may set different annual deemed value rates in respect of the same stock which apply to different levels of catch in excess of annual catch entitlement.

46 Differential deemed value rates are used as an extra deterrent to not catch fish in excess of ACE by increasing the annual deemed value rate for an individual as more and more catch is taken in excess of the ACE held. Differential deemed values have two effects. First, if a commercial fisher decides to fish on deemed values without ACE or with little ACE relative to landings, then the deemed value rate for the catch increases to the top step on the differential schedule. This provides a very strong incentive for commercial fishers to acquire ACE. Second, if the entire ACE is caught by the industry, then the differential deemed value increases as the industry increasingly over-catches the TACC. The result is an increasing economic disincentive to exceed the TACC.

47 In this FAP, the term 'standard differentials' refers to the most frequently used differential deemed value schedule. Those standard differentials increase the deemed value by 20% over the annual rate when catch equals more than 120% of ACE, by 40% when catch is more than 140% of ACE, by 60% when catch is more than 160% of ACE, by 80% when catch is more than 180% of ACE, and by 100% when catch is more than 200% of ACE. Prior to the 2007 Deemed Value Standard, standard differentials were the norm when differentials were implemented.

48 Since 2007, MFish has recommended that some stocks be subject to other ramping schedules. Other schedules for differential deemed value rates are called 'non-standard differentials' in this FAP. For some stocks this may mean applying differential deemed value rates at small percentages of over-catch such as 2% to discourage any fishing on deemed values; for others it may mean applying standard differential deemed value rates.

49 MFish considers that the differential deemed value rates applied depend on the stock and the behaviours that deemed values ought to manage. The actual rates at which the differentials are set are flexible and do not have to be based on the annual rate (although this is the norm). Instead, they can be set at any financial amount that you consider necessary to provide the appropriate disincentive for fishers to take fish without ACE.

50 MFish considers that differential deemed value rates can build in buffers that manage risk of future uncertainty in economic variables such as landed price and foreign exchange rates. Deemed values are economic tools. How they function will be determined by changes in economic conditions. Since New Zealand exports 92% of all fish caught, fluctuations in international fish prices and in exchange rates (especially the US$) can make fishing on deemed values attractive or unattractive depending on the current economic situation.

51 In the absence of differentials, the fishing industry can harvest many multiples of the TACC by paying the fixed deemed value rate. MFish believes you should consider whether targeted harvests well in excess of TACCs would be acceptable for the one to two years required to change deemed values. MFish considers that for many stocks, such a result would not be desirable. MFish also believes that to fail to consider this possible outcome may be inconsistent with a precautionary approach. Setting a differential deemed value rate that is currently "irrelevant" can be a costless way to allow for unforeseen events. Such a precautionary differential would not cost industry anything unless their fishing increased substantially and unexpectedly and if that fishing activity meant they were fishing in excess of their ACE holding.

52 Differential deemed value rates are an important part of establishing robust deemed value rate settings for a stock that will provide appropriate incentives to balance catch with ACE throughout the fishing year. While differential deemed value rates cannot completely compensate for unexpected economic changes, they do limit the range of conditions within which inappropriate incentives to fish on deemed values, rather than to balance catch with ACE, will continue to operate. This will limit the impact until the necessary changes are implemented.

Interim deemed values

53 The Act requires both annual and interim deemed value rates to be set for all stocks. There is a risk that setting interim deemed value rates too low will delay the balancing of catch until the end of the fishing season. This may lead to a race for ACE and insufficient ACE to cover all catch, therefore leading to the TACC being exceeded.

54 Prior to 2007, interim deemed value rates were generally set at 50% of the annual rate. While MFish recommends that the interim deemed value rates should remain at 50% of the annual rates for most stocks, MFish may recommend higher interim deemed value rates for some stocks. MFish proposes that, in situations where more regular balancing is warranted to ensure catch levels do not exceed available ACE, the interim deemed value rate should be set closer to the annual rate.

Consultation Process

55 Section 75A of the Act requires you to consult, if practicable, with persons or organisations that you consider represent classes of persons who have interests in the stocks under review, including Maori, recreational, commercial and environmental interests.

56 ESL and NZFCF submitted that engagement needs to be made more encompassing and that commercial fishermen should be more involved in the development of the

IPPs. MFish is happy with the standard consultation process for IPPs that it followed in the October 2010 sustainability round. This involved posting all IPPs on MFish's website and alerting stakeholders to this through a letter and/or email sent to approximately 300 companies, organisations and individuals.

57 Submitters requested TACC reviews for the following stocks: RSK8, SSK8, SNA8, KIN8 and GUR3 and GUR7. As per the Deemed Value Standard, the deemed value review group is only empowered to review deemed value rates. However, the group is able to make recommendations to other MFish processes should alternative management changes be considered more appropriate, such as an adjustment to the TACC. MFish notes the requests and the suggestions for TACC change will be put forward for consideration at next year's sustainability round review.

58 In their submission, SeaFIC was pleased to note "an improvement in the analyses presented" in the IPP, however SeaFIC wished to see further effort in ensuring that the deemed value review process allows for consideration of management options other than a deemed value response.

59 MFish notes SeaFIC's comments, and as per the Process section above, MFish is confident that it determines the most appropriate tool to manage the problem. Stocks proposed for deemed value rate review are those stocks assessed by MFish as needing the deemed value rate reviewed as opposed to consideration of other tools.

Analysis

60 This section sets out a summary of the analysis for each stock and an assessment of the proposed deemed value rate adjustment. Please note that in the following review and submission analysis, MFish is recommending that not all stocks included on the review list require a deemed value rate adjustment at this time.

Black cardinalfish: CDL3 and CDL4

Rationale and IPP proposal

61 The CDL3 and CDL4 TACCs are 196 and 66 tonnes respectively, and neither of these TACCs have been over caught at current levels, indicating the economic incentives are correctly set for these stocks. However, MFish is concerned that these incentives are likely to change given the management measures currently proposed for CDL2.

62 CDL3 and CDL4 have therefore been included in this review in order to standardise the deemed value regime across three neighbouring black cardinalfish QMAs, CDL2, 3 and 4. These three QMAs likely constitute a single stock, based on biological and physical characteristics. Given the substantial reduction to the TACC that is being proposed for CDL2, it is important that you remove any incentives for fishers to misreport their CDL2 catch as being taken from an adjoining stock (CDL3 and CDL4).

63 Management measures for CDL2 are under review because of concerns that the stock is currently below sustainable levels and a reduction to the TAC and TACC is proposed. A separate advice paper on this matter will be provided to you as part of this sustainability round. In summary, MFish has proposed a catch limit reduction, and amendments to the CDL2 deemed value rates in response to this reduction as follows:

a) increase the CDL2 annual and interim deemed value rates; and

b) introduce a single differential deemed value rate of $0.60 per kg to apply to all catch that is 20% in excess of ACE holdings.

64 The Deemed Value Standard supports implementation of consistent deemed value rates across neighbouring stocks, to remove incentives for fishers to take advantage of a lower deemed value rate by misreporting catch as being taken from an adjoining fish stock. Removal of incentives to misreport catch is especially necessary for these three stocks because they can be fished as part of a single fishing trip.

65 MFish also expects incentives to over-catch CDL2 will increase if you approve the proposed TACC reduction. Implementing a single differential deemed value rate should encourage fishers to limit catch to the TACC. Although no over-catch is being taken in any of the three CDL stocks at present, the single differential rate will maintain appropriate incentives for future conduct, if you choose to reduce the CDL2 TACC.

66 In the IPP MFish proposed uniform annual and interim deemed value rates across both CDL3 and CDL4, in line with CDL2. This will require increasing the current CDL3 annual and interim rates, but retaining the current CDL4 rates. Secondly, MFish proposed introducing a single differential deemed value rate that will apply to all catch that is 20% over ACE holdings.

Submissions

67 SeaFIC's submission states that these three CDL stocks are fished by different companies, obviating the need to implement a uniform deemed value regime. However, SeaFIC does note that the proposed increase to the differential deemed value rates in CDL3 and CDL4 are consistent with the normal range for the setting of annual deemed values. In addition, given that no over-catch is occurring in these stocks, SeaFIC states that the proposed regime will have no impact on CDL3 or CDL4 fishers.

MFish view

68 Following an examination of landing information from CDL2, 3 and 4, MFish has concluded that several companies do make significant landings from all three CDL stocks and implementing a uniform regime is appropriate.

69 The 2009-10 port price information that was used in the IPP has since been updated and approved by you for the 2010-11 fishing year. The CDL3 port price for 2010-11 has increased from $0.72 per kg to $0.96 per kg and the CDL4 port price has also increased to $0.77 per kg. Despite these increases, the annual and interim deemed value rates proposed in the IPP remain appropriate and MFish does not consider it necessary to change any of the proposals.

Recommendations

70 MFish recommends that you implement the following deemed value rates in CDL3 for the 2010-11 fishing year:

a) Annual deemed value rates to increase from $0.30 per kg to $0.52 per kg

b) Interim deemed value rate to increase from $0.15 per kg to $0.26 per kg

c) A single differential deemed value rate of $0.60 per kg to apply to all catch that is 20% in excess of ACE holdings.

71 MFish recommends that you implement the following deemed value rates in CDL4 for the 2010-11 fishing year:

a) Annual deemed value rates to remain unchanged at $0.52 per kg

b) Interim deemed value rates to remain unchanged at $0.26 per kg

c) A single differential deemed value rate of $0.60 per kg to apply to all catch that is 20% in excess of ACE holdings.

Hake – HAK1 & HAK4

Rationale and IPP proposal

72 HAK1 and HAK4 are included in this review in order to standardise the deemed value regime across all hake stocks. Recent changes to HAK7 deemed value rates may be providing incentives for fishers to misreport catch between stocks, so as to take advantage of a lower deemed value rate in the neighbouring HAK1 and HAK4 stocks.

73 To provide the correct incentives for fishers to acquire ACE and not misreport catch, it can be necessary to implement a uniform deemed value regime in neighbouring stocks of the same species. Having two adjacent QMAs for the same species with substantially different deemed value rates, provides an incentive to misreport excess catch so as to qualify for the lower deemed value rate. This incentive will be particularly great if vessels fish across two adjoining stocks during the same fishing trip, as can be the case with HAK1 and HAK7, and HAK1 and HAK4.

74 The deemed value rates for HAK7 were adjusted as part of the October 2009 sustainability round, as the ACE price had almost reached the annual deemed value rate during the 2007-08 fishing year. This situation may have provided an incentive to fish on deemed values, rather than acquiring ACE, and MFish adjusted the deemed values accordingly. However, following consultation on the 2009 sustainability round, several industry stakeholders indicated a preference for uniform deemed values across all hake stocks, stating that HAK7 was no different from the remaining hake stocks and should not be treated as such.

75 Section 75A of the Act sets out the requirement to consult with persons who have an interest in the stock before any deemed value rates are set under section 75. Amending the HAK1 and HAK4 deemed value rates was not proposed in the 2009 IPP, so the section 75(A) requirements were not met. For this reason, no amendments were made in 2009, but MFish agreed to review the HAK1 and HAK4 deemed value rates during the 2010 sustainability round.

76 In the IPP, MFish proposed increasing the deemed value rates for HAK 1 and HAK 4 in line with HAK 7. MFish noted in the IPP that there are no concerns with the TACC being breached in HAK1 or HAK4. Rather, the proposal to implement a standard

deemed value regime reflects the need to reduce the incentives for fishers to misreport HAK7 catches as being harvested from HAK1 or HAK4.

Submissions

77 Sanford and SeaFIC both support the deemed value rates for HAK1 and HAK4 that were proposed in the IPP.

Recommendations

78 MFish recommends you approve the following deemed value rates for HAK1 for the 2010-11 fishing year:

a) Annual deemed value rate to increase from $1.17 per kg to $1.60 per kg

b) Interim deemed value rate to increase from $0.59 per kg to $0.80 per kg

c) Differential deemed value rates will be adjusted to reflect the proposed new annual rate, as outlined in table 2 below:

79 MFish recommends you approve the following deemed value rates for HAK4 for the 2010-11 fishing year:

a) Annual deemed value rate to increase from $1.25 per kg to $1.60 per kg

b) Interim deemed value rate to increase from $0.63 per kg to $0.80 per kg

c) Differential deemed value rates will be adjusted to reflect the proposed new annual deemed value rate, as outlined in table 2 below:

Table 2: Recommended differential deemed value rates for HAK1 and HAK4

Catch in excess of ACE holdings (%)	Current differential rates		Proposed differential rates	
	Current deemed value rate for HAK1 ($)	Current deemed value rate for HAK4 ($)	Catch in excess of ACE holdings (%)	Proposed deemed value rate for HAK1 and HAK4 ($)
20	1.404 per kg	1.50 per kg	20	1.92 per kg
40	1.638 per kg	1.75 per kg	40	2.24 per kg
60	1.872 per kg	2.00 per kg	60	2.56 per kg
80	2.106 per kg	2.25 per kg	80	2.88 per kg
100	2.340 per kg	2.50 per kg	100	3.20 per kg

Ribaldo: RIB7

Rationale and IPP proposal

80 RIB7 has been included in this review because chronic overfishing has occurred in this fishery. RIB7 ACE has been over-caught each fishing year since 2001-02, despite the TACC being increased by nearly 500% in 2006, from 55 to 330 tonnes. The RIB7 TACC is now set at a level that is thought to be appropriate for the stock, given past utilisation patterns. However, it is clear that current deemed value rates are not providing the appropriate incentives for fishers to constrain catches to the TACC.

81 The current RIB7 deemed value regime has been in place since 1 October 2008, when MFish introduced non-standard differential deemed value rates. Fishers catching between 110-120% of their ACE holdings are currently required to pay $1.20 per kg, and if catch exceeds 120% of ACE holdings, a backstop rate of $2.00 per kg is applied (see Table 3 below). MFish had thought that these differential deemed value rates would provide an adequate incentive for fishers to constrain their catch to the available ACE. However, RIB7 was again over-caught by 138% during the 2008-09 fishing year.

82 This volume of over-catch shows that it remains economically viable for some fishers to catch in excess of their ACE holdings and pay up to $2.00 per kg for this catch, although MFish acknowledges that this is not the case for all fishers operating in RIB7. In order to avoid penalising fishers who are catching small amounts of RIB7 as genuine bycatch, MFish recommends retaining the current annual and interim deemed value rates. To provide those fishers who are over-catching RIB7 with incentives to constrain their catch to the available ACE, the IPP proposed increasing t differential deemed value rate for catch in excess of 20% of ACE holdings by $0.50 from $2.00 to $2.50.

Submissions

83 SeaFIC does not support the proposed increase to the RIB7 differential deemed value rate. The submission notes that both the 2010-11 RIB7 port price and the 2009-10 year-to-date ACE trade price show substantial increases from the figures which were used in the deemed value review. SeaFIC asserts that these changes indicate that the deemed value regime that was introduced on 1 October 2008 is having the desired impact on fishers and is impacting significantly on the profitability of fishing on deemed values.

84 MFish view

85 MFish is not convinced that the changes SeaFIC highlight signal a change in fisher behaviour and for this reason considers that the proposed change to the differential deemed value rate is appropriate. In addition, the increase in port price suggests that it may well remain profitable for fishers to continue fishing in excess of the TACC as they target the more valuable hoki.

Recommendations

86 MFish recommends you approve the following deemed value rates for RIB7 for the 2010-11 fishing year:

a) Annual deemed value rate remains unchanged at $0.80 per kg

b) Interim deemed value rate remains unchanged at $0.40 per kg

c) Differential deemed value rates will be adjusted as outlined in table 3 below:

Table 3: Proposed differential deemed value rates for RIB7

Current differential rates		Proposed differential rates	
Catch in excess of ACE holdings (%)	**Current deemed value rates for RIB7 ($)**	**Catch in excess of ACE holdings (%)**	**Proposed deemed value rates for RIB7 ($)**
10	1.20	10	1.20
20	2.00	20	2.50

Trevally: TRE1

Rationale and IPP proposal

87 TRE1 has been included in this review to bring TRE1's deemed value rates into line with what is proposed in this year's sustainability round for a neighbouring stock, TRE2, in order to not incentivise misreporting catch.

88 The IPP proposed increasing the interim and annual deemed value rates as well s adjusting the differential deemed value rates to reflect the proposed new annual deemed value rate.

89 The TACC for TRE1 is 1,506 tonnes. TRE1 has not been over caught during the last five years, with a significant average undercatch of 38.5%. During the 2008-09 fishing year, approximately 43% of ACE remained available at the end of the fishing year. In the current fishing year (2009-10) catch of TRE1 reported up to June 2010 is 616 tonnes, or just 41% of the TACC with three months still left in the fishing year.

90 TRE1 has been included in this review because there has been an increase in the port price and there was some deeming of fish when ACE was available. In addition, the TRE2 TAC and TACC are being reviewed as part of the October sustainability round and MFish is recommending that TRE2 deemed value rates are increased. The rationale for this proposed increase is discussed in detail in the TRE2 FAP.

91 TRE1 is the adjoining stock to TRE2, and MFish considers it is important to ensure fishers have the correct incentives to limit their catch to the TACC and not to misreport catch as being taken from an adjoining stock.

Submissions

92 SeaFIC submitted that the amount of deeming and amount deemed is 'trivial' and that the deemed value is within the normal range to be effective. SeaFIC also submits that TRE2 is a separate issue and a separate fishery. SeaFIC states that they are led to believe that there is some mixing of vessels and tows across the FMA boundary and the possibility of area misreporting exists. Therefore, SeaFIC are not opposed to the Ministry's approach to align the deemed value regimes for TRE1 and TRE2.

93 Te Uri O Hau submit that TRE1 is one of their most important taonga species in their rohe.

94 AFL and Sanford support the proposed deemed value rates for TRE1 for the 2010/11 season.

MFish view

95 MFish considers the change in the deemed value rates of the neighbouring QMA (TRE2) means an increase in the deemed value rates for TRE1 is appropriate to discourage 'trucking' between FMAs.

96 Therefore, MFish proposes an increase in the deemed value rates for TRE1 to match the proposed deemed value rates for TRE2. This proposed increase will bring the annual deemed value rate closer to the landed value and will ensure fishers have the correct incentives not to misreport.

Recommendation

97 MFish recommends you approve the following deemed value rates for TRE1 for the 2010-11 fishing season:

a) Annual deemed value rate to increase from $1.10 per kg to $1.25 per kg.

b) Interim deemed value rate to increase from $0.55 per kg to $0.70 per kg.

c) Standard differential deemed value rates adjusted to reflect the proposed new annual deemed value rate, outlined in the table below.

m)

Table 4: Proposed differential deemed value rates for TRE1

Current differential rates		Proposed differential rates	
Catch in excess of ACE holdings (%)	**Current deemed value rate for TRE1 ($)**	**Catch in excess of ACE holdings (%)**	**Proposed deemed value rate for TRE1 ($)**
20	1.32 per kg	20	1.50 per kg
40	1.54 per kg	40	1.75 per kg
60	1.76 per kg	60	2.00 per kg
80	1.98 per kg	80	2.25 per kg
100	2.20 per kg	100	2.50 per kg

Rough Skate: RSK8

Rationale and IPP proposal

98 RSK8 has been included in this review because during the 2008-09 fishing year catch was in excess of ACE, deemed value payments have been made in previous years, port price has increased and a quota owner, ESL, requested that deemed values be reduced.

99 The IPP proposed no change to the deemed value rates for RSK8 as MFish considered that:

n) a decrease to deemed values as proposed by ESL would not incentivise fishers to record catch against ACE; and

o) an increase to current deemed values would likely promote discarding of rough skate as there would be a reduced economic incentive for fishers to land their catch.

100 The TACC for RSK8 is 21 tonnes. RSK8 has been significantly over caught every year since 2003 when it was brought into the QMS. During the 2008-09 fishing year, 217% of ACE (24.5 tonnes above available ACE) was caught resulting in deemed value invoices of $10,937 being issued. In the current fishing year (2009-10) catch of RSK8 reported up to June 2010 is 35.1 tonnes which is already 14 tonnes above the TACC, with three months still left in the fishing year.

Submissions

Note that stakeholder submissions on RSK8 and SSK8 were combined and are discussed below

101 ESL submits that over the past 12-24 months the landed value of both RSK8 and SSK8 has decreased resulting in the annual deemed value rate being similar to the landed value. ESL submits that this means the current deemed value rates are inconsistent with the Deemed Value standard.

102 SeaFIC states that, based on the port price survey and adjusting for the average price of ACE, the deemed value rates for both RSK8 and SSK8 exceed the current port price. Given that these stocks are unavoidable by-catch and that there have been problems with TACCs since their introduction to the QMS, SeaFIC contends that fishers should not be unfairly punished by deemed values that are set 'excessively high'.

103 SeaFIC and ESL consider that the deemed value rates for both RSK8 and SSK8 should be brought into line with the current MFish principles for setting deemed values. In the absence of any other extenuating factors, SeaFIC and ESL recommend that the annual deemed value rate for RSK8 and SSK8 should be reduced to $0.30 per kg and differential deemed rates should not be applied. In addition SeaFIC considers the deemed value regime should be re-considered when the TACCs are reviewed.

104 Sanford supports the comments made in the SeaFIC submission However, Sanford supports the IPP proposal for no change to the deemed value rates for RSK8 or SSK8.

MFish view

105 MFish notes the points made by submitters, and acknowledges that the latest port price for RSK8 is $0.31 per kg and that this price is lower than the annual deemed value rate of $0.44 per kg.

106 However, MFish does not support a decrease to the deemed value for RSK8 because:

p) Fishers are not balancing catch against ACE currently and a reduction to the deemed value would further weaken incentives to balance catch;

q) Although port price is lower than the current deemed value rates rough skate is primarily a bycatch species and as such has a "shadow value" driven by the higher value of the target fisheries where it is taken as a bycatch. This 'shadow value' is not reflected in the current port price.. In this circumstance a reduction to the deemed value would not create the appropriate incentives for fishers to balance catch against ACE

r) The species is listed on the 6th schedule which allows fishers to return RSK to the water if it is likely to survive, meaning there is often no need to land catch taken.

107 MFish notes that the stock has been overcaught since it was introduced to the QMS. However, the current deemed value rates are well above the port price and MFish considers further increases to the deemed value rates may disincentivise fishers, leading to increased discarding of rough skate bycatch. This also has implications for the quality of information available for future TAC setting considerations. MFish intends to investigate reasons for the ongoing overcatch in this fishery during 2011 and may review the deemed value rates again depending on the outcome of that investigation

Recommendation

108 MFish recommends you make no change to RSK8 deemed values for the 2010-11 season.

Smooth Skate: SSK8

Rationale and IPP proposal

109 SSK8 has been included in this review because the 2008-09 catch was in excess of ACE, deemed value payments have been made in previous years, port price has increased (slightly when taking account of ACE) and a quota owner, ESL, requested a review of the deemed value requesting that deemed values be reduced.

110 The IPP proposed no change to the deemed value rates as the level of over-catch in SSK8 is small (2 tonnes) and there was no information to indicate a significant change to port or landed price.

111 The TACC for SSK8 is 20 tonnes. Although SSK8 has been slightly over caught in the last two fishing years, the TACC has been undercaught in every other year since it was introduced to the QMS in 2003. In the current fishing year reported catch up to June 2010 is 12.9 tonnes. This catch level is higher than the reported catch in June 2009 suggesting that the TACC may be exceeded again this fishing year.

Submissions

112 Please see submissions section in RSK8 above.

MFish view

113 MFish notes the points made by submitters, and acknowledges that, the latest port price for SSK8 is $0.41 per kg which is lower than the annual deemed value rate of $0.44 per kg.

114 However, given the low level of overcatch in the SSK8 fishery MFish considers the current deemed value rates are creating an appropriate incentive to balance catch against ACE. Decreasing the deemed value rates as proposed by submitters would weaken current incentives for fishers to balance catch against ACE and may result in increased catch above the current TACC.

115 Conversely, MFish does not consider the level of overcatch warrants an increase to the current deemed value rates at this time as further increases may disincentivise fishers, leading to increased discarding of smooth skate bycatch MFish will continue to monitor SSK8 catch levels during 2010-2011.

Recommendation

116 MFish recommends you make no change to SSK8 deemed values for the 2010-11 season.

Snapper: SNA8

Rationale and IPP proposal

117 SNA8 has been included in this review because catch was in excess of ACE, deemed value payments have been made in previous years, and a quota owner, ESL, requested a review of the deemed value. SNA8 was also included in the October 2009 deemed value review at the request of ESL who requested that deemed value rates be reduced.

118 The IPP proposed no change to the deemed value rates as MFish believed that the current deemed value rates are providing the correct incentives in this fishery to constrain catches to the TACC and the recent overfishing was by one operator who is no longer fishing.

119 SNA8 is both a target fishery (40% in 2008/09 fishing year – all fishing methods combined) and is taken as bycatch in trevally, gurnard and tarakihi bottom trawl fisheries (67% taken as bycatch in 2008/09 fishing year in the bottom trawl fishery, while ~28% was targeted).

120 The TACC for SNA8 is 1,300 tonnes. Since 2005/06, when the TACC was reduced, the SNA8 TACC has been marginally over caught every year during the last five fishing years but only by a small amount (an average of 4%). During the 2008-09 fishing year, just under 103.5% of ACE (44.5 t above available ACE) was caught in SNA8 resulting in deemed value invoices of $353,544 being issued. However, as noted above, the majority ($327,257) was incurred by one operator, who has since had their permit suspended. In the current fishing year (2009-10) catch of SNA8 reported up to June 2010 is 1084.3 tonnes. While the catch of SNA8 this fishing year is lower than the previous fishing year over the same period, it is likely that the TACC will be over caught again this fishing year.

Submissions

121 ESL considers that as SNA8 abundance has improved, the ability to source ACE has become more difficult. The high annual deemed value and health of the fishery has now driven the ACE price to the same level as the landed price and in some cases higher. ESL considers that the current deemed value rates for SNA8 also encourages fishers to discard or to high grade.

122 SeaFIC submits that deemed value rates for SNA8 have been reconsidered on a number of occasions in recent years and that there are diverse views on the appropriateness of the current setting. Some quota-holders view the current settings as appropriate to deter over-fishing of the TACC; others view it as excessive, incentivising discarding and adversely affecting the profitability of the fishing sector. All parties however appear to agree that:

a) The TACC for SNA8 is unrealistically low, is inconsistent with SNA8 abundance and needs to be increased; and

b) The SNA8 abundance and the deemed value structure together result in discarded fish and/or decreased access to other stocks where SNA8 may be an unavoidable by-catch.

123 SeaFIC believes that the IPP did not adequately provide the rationale or provide reasons why the Ministry's general principle of setting it between ACE and landed price should be set aside in favour of a regime that seemingly incentivises discarding.

124 ESL submits that the catch of SNA8 cannot be constrained by setting a high deemed value rate and that if MFish does not decrease the deemed value rate, 'they are not following their own guidelines and undermining the QMS'. ESL submits that the fishery is in good health and although not at target biomass, it is moving towards it.

125 CRF submitted that SNA8 is a bycatch fishery and should be dealt with differently than a target fishery, CRF also recommends that differential deemed value rates should not be deployed for bycatch stocks.

126 Te Uri O Hau submits that SNA8 is one of their most important taonga species in their rohe.

127 Sanford supports the IPP proposal for no change to the deemed value rates for SNA8 as proposed in the IPP.

MFish view

128 Past Ministers have decided that the significance of some stocks (such as SNA8) to non-commercial users warranted special treatment with respect to deemed values, which is consistent with the High Value Stocks section of the Deemed Value Standard. At $8.00 per kg, the annual deemed value rate provides a very strong incentive to avoid paying deemed values and hence to avoid landing fish in excess of ACE. This policy is supported by non-commercial fishers and by some in industry. Others in industry argue that these deemed values provide unnecessarily high incentives to discard fish.

129 MFish notes that this is a difficult issue and that there is understandable disagreement on the setting of SNA deemed value rates given SNA8 is an important commercial and recreational species. SNA8 biomass is considered to be at a level below target biomass and a rebuilding strategy is in place. MFish therefore considers it important that catches are constrained to the current TACC.

130 MFish believes that the current deemed value rates are providing the correct incentives in this fishery to constrain catches to the TACC, and that while recent catches have been close to the TACC, the overcatch that occurred last season was made by one operator, who has now been suspended from fishing.

Recommendation

131 MFish recommends you make no change to SNA8 deemed values for the 2010-11 season.

Kingfish: KIN8

Rationale and IPP proposal

132 KIN8 has been included in this review because catch was in excess of ACE, deemed value payments have been made in previous years, the port price has increased, and a quota owner, ESL, requested that the deemed value rates be reduced.

133 The IPP proposed no change to the deemed value rates for KIN8 due to the fact that overcatch in the last year was marginally above the level of the TACC and that 57% of the 2 tonne overcatch that occurred last season was made by one operator, who has since been suspended from fishing.

134 While KIN8 is caught by both the deepwater and inshore fleet, the majority is caught by inshore vessels. Because KIN8 is an important non-commercial stock, in the past, Ministers have increased deemed value rates to discourage KIN8 commercial landings. However, overcatches of the TACCs have continued.

135 The TACC for KIN8 is 36 tonnes. KIN8 has been over caught every year for the last six years. On average, over the last five years, the TACC has been approximately 20% overcaught. During the 2008-09 fishing year, approximately 106.5% of ACE (2.4 tonnes above available ACE) was caught in KIN 8 resulting in deemed value invoices of $35,639 being issued. In the current fishing year (2009-10) catch of KIN8 reported up to June 2010 is 34.8 tonnes, or just over 1 tonne short of the TACC with three months still left in the fishing year.

Submissions

136 IFL, CRF and SeaFIC submitted that KIN8 is an unavoidable by-catch fishery for the trawl, seine and set-net industry and should be dealt with differently than target fisheries. CRF also recommend that differential deemed value rates should not be applied to bycatch stocks.

137 In addition, SeaFIC noted that while trawl and seine fishers can return KIN8 to the sea if the fish are expected to survive, set-netters must retain and declare the fish. If fishers wish to pursue their target fish-stocks, KIN8 is unavoidable.

138 SeaFIC also submits there is a persistent over-catch and the annual deemed value rate ($8.90 per kg) exceeds the landed price ($5.24 per kg). Given the prices, SeaFIC do not believe that catch of KIN8 is targeted fishing on deemed values. SeaFIC believes that the deemed value is excessive and request reduced reduction to the deemed value to be consistent with the Ministry's position as to what constitutes an effective deemed value.

139 ESL also submitted that the ACE price was excessive due to the excessive deemed value rate. ESL submits that MFish should follow the deemed value guidelines and principles and therefore set KIN8 deemed values at $4.00 -$5.00 per kg.

140 While the majority of submitters agreed that MFish had KIN8 port price and export prices wrong, there was disagreement between submitters on what the correct prices are, with large variations driven by whether the fish is landed fresh or frozen.

141 Sanford supports the proposal for no change to the deemed value rates for KIN8.

142 Te Uri O Hau submits that KIN8 is one of their most important taonga species in their rohe.

MFish view

143 MFish notes that it is unable to set different deemed values for different fishing methods. MFish also notes there is uncertainty around the port price for KIN 8 and that prices can vary significantly depending on whether the fish is landed fresh or frozen. Regardless, it appears that the current annual deemed value rate is above the range of port prices outlined by submitters.

144 MFish notes that the 2010/11 port price ($5.24 per kg) has increased marginally compared to the previous year's estimate ($5.15 per kg). However, it remains less than the $5.33 per kg that was used when the (then) Minister last considered KIN8 in 2008 and retained the current deemed value. Although the Minister left the deemed value rate unchanged he directed MFish and the industry to seek solutions to the

persistent over catches. He indicated that MFish should revisit these stocks in the October 2009 deemed value review. The deemed value rates for KIN7 and KIN8 were reviewed in October 2009 and no changes were made.

145 Past Ministers have decided that the significance of some stocks (such as KIN8) to non-commercial users warranted special treatment with respect to deemed values, which is consistent with the High Value Stocks section of the Deemed Value Standard. At $8.90 per kg, the deemed value rates provide a very strong incentive to fishers to avoid paying deemed values and hence to avoid landing fish in excess of ACE. This policy is supported by non-commercial fishers and by some in industry.

146 MFish notes that overcatch in the last year was marginally above the level of the TACC and that 57% of the 2 tonne overcatch that occurred last season was made by one operator, who has now been suspended from fishing. In this context, MFish considers it difficult to justify changing the deemed value, given that this fishery is of high importance to the recreational sector as recognised by past Ministers and MFish does not want to incentivise catch above the TACC.

Recommendation

147 MFish recommends you make no change to KIN8 deemed values for the 2010-11 year.

Red Gurnard: GUR3 and GUR7

Rationale and IPP proposal

148 Gurnard (GUR3 and GUR7) has been included in this review because catch was in excess of ACE in GUR3, deemed value payments have been made in previous years in both fisheries, and MFish Field Operations staff have reported that illegal discarding may be occurring in GUR3 and GUR7.

149 GUR3 and GUR7 are taken as bycatch in inshore bottom trawl fisheries targeting flatfish, red cod and tarakihi (for GUR 3) and flatfish and snapper (for GUR 7).

150 The TACC for GUR3 is 900 tonnes. GUR3 has been over caught every year for the last five years by an average of 15%. During the 2008-09 fishing year, approximately 117% of ACE (139.2 tonnes above available ACE) was caught in GUR3 resulting in deemed value invoices of $214,622 being issued. In the current fishing year catch of GUR3 reported up to June 2010 is 853.7 tonnes, or 46 tonnes short of the new TACC with three months still left in the fishing year, meaning it is likely to be overcaught.

151 The TACC for GUR7 is 715 tonnes. GUR7 has been over caught in two of the last five years, with an average catch over that period approximately 7% less than the TACC. During the 2008-09 fishing year, approximately 12.7% of ACE remained available at the end of the fishing year. In the current fishing year (2009-10) catch of GUR7 reported up to June 2010 is 397.4 tonnes, or just 55% of the TACC with three months still left in the fishing year.

152 The IPP proposed no change to the deemed value rates for GUR3 and GUR7 as MFish considered low prices paid for small gurnard are more likely to be incentivising high grading discards and that this is not an issue that can be addressed via deemed value rate settings.

Submissions

153 Sanford supports no change to deemed value rates for GUR3 and GUR 7. Ocean Fisheries support no change to GUR3.

154 SeaFIC states that they cannot see how GUR7 deemed value rates warrant review. A deemed value payment of $73 in 2008-09 in respect of an over-catch of 53 kilograms cannot be grounds to review deemed value rates.

155 SeaFIC notes that the TACC for GUR3 was reviewed and increased by 100 tonnes last year. The deemed value for GUR3 was also reviewed and decreased from $1.60 per kg to $1.50 per kg and the unique differential deemed value rates replaced with a standard differential structure.

156 SeaFIC notes that the GUR3 deemed value rate of $1.50 per kg is inconsistent with the normal settings for a deemed value (being between 80% of port price and 120% of ACE) and exceeds the port price when an adjustment for ACE provision is removed. SeaFIC believes that increasing the GUR3 deemed value rate would not be appropriate and that the current values are likely to incentivise illegal discarding and mis-reporting.

157 Challenger agrees that red gurnard (GUR7) need not have an increase in the deemed value.

MFish view

158 The deemed value rates for GUR3 and GUR7 were reviewed in October 2009 as the TACs and TACCs for both fish stocks were reviewed. As a result the TACC for GUR3 was increased by 100 tonnes. At the same time you decreased the annual deemed value rate to $1.50 per kg and the interim deemed value rate to $0.75 per kg. You also altered the unique differential deemed value rate in GUR3 to with a standard differential deemed value rate.

159 Under the new GUR3 TACC (900 tonnes) and unique differential deemed value regime (first ramp at catch 130% of ACE), fishers can catch 1,170 tonnes before the differential deemed value rates takes effect.

160 The GUR7 TACC was increased by 34 tonnes. At the same time you increased the annual deemed value rate to $1.25 per kg and the interim deemed value rate to $0.63 per kg and you adjusted the standard differential deemed value rates to match the new annual deemed value rate.

161 MFish considers it necessary to wait until the current fishing season is complete and a review of the recent changes can be analysed, prior to recommending any deemed value rate changes to GUR3 and GUR7. Further, MFish considers low prices paid for small gurnard are more likely to be incentivising high grading discards and that this is not an issue that can be addressed via deemed value settings.

Recommendation

162 MFish recommends you make no change to GUR3 and GUR7 deemed value rates for the 2010-11 year.

Other Issues Raised in Inshore Submissions

Stocks reviewed in 2010

163 Some commercial submitters noted disappointment that such a small number of fishstocks were considered for review and/or the MFish process for determining stocks to be reviewed. Given the constraint on resources Challenger Finfish submitted that the stocks should have been prioritised on the basis of the potential value that a review could add to the fishery. SeaFIC submitted that the proposed management options for all inshore papers provided little utilisation benefit and questioned the cost-benefits of the use of MFish resource for these reviews.

MFish comment

164 MFish advised stakeholders that it would be only able to undertake a limited number of sustainability measures in 2010 because of limited resources and the need to focus on the development of planning frameworks such as fisheries plans. The full list of proposals, including those put forward by stakeholders, was evaluated by MFish to determine priority species for review.

Approach to management

165 SeaFIC submits that MFish is adopting an unjustifiably cautious approach to potential sustainability concerns, resulting in a failure to appropriately consider utilisation benefits. SeaFIC suggests this approach is being taken, at least in part, to compensate for MFish's lack of ability to manage fisheries dynamically. SeaFIC submit that consistent approaches for adjusting TAC/TACCs for low knowledge stocks need to be developed to ensure value opportunities are realised in this fisheries sector.

166 Some non-commercial fishers submitted criticism of the functioning of the deemed values regime and the ability to carry over 10% of ACE from the previous year if under caught.

167 TASFISH and NZRFC submit that any over-catch impacts negatively on stock abundance and denies the recreational sector access to their share of the TAC. They submit that reducing the following years TACC and ACE by the previous years overcatch, when commercial fishers catch more than they are entitled to, should be implemented immediately as a sustainability measure.

168 TASFISH and NZRFC submit that MFish should develop the ability to monitor catch landings in real time to enable catch landing forecasts. These accurate forecasts will enable fisheries managers to close fisheries in total before TACCs are exceeded and/or ensure commercial fishers holding no ACE are also forced to cease fishing.

MFish comment

169 MFish strongly refutes that it is being overly cautious in its assessment of available information and range of management options. The information principles in the Fisheries Act 1996 set out how decision makers should treat information when it is uncertain. In particular, this section sets out that decision makers should be cautious where information is uncertain but they should not use uncertainty in information to postpone making a decision necessary to achieve the purpose of the Act.

170 In this context MFish analyses available information on a case by case basis and provides advice to you on the level of uncertainty associated with that information so

that you weight that information accordingly in making a decision. MFish considers the range of options presented in the IPP and FAP reflect the level of, and certainty in, best available information and provide an appropriate balance between ensuring sustainability and providing for utilisation given that information.

171 In relation to comments on overfishing made by TASFISH and NZRFC, MFish continues to monitor catch information and review management controls including TACs, allowances and deemed values to ensure that catch is managed within the TACC. Overfishing of a TAC may result in the subsequent reduction of that TAC. Reported overfishing by individual commercial fishers is subject to existing controls under the Fisheries Act. The consistent overfishing of the TACC or an allowance, which results in the reduction of the TAC, as a general principle, ought to be attributed to the stakeholder group responsible for the overfishing.

Summary of Recommendations

Inshore Sustainability Round

Hapuka/Bass (HPB 3)

MFish recommends that, for the HPB 3 fishery, for the fishing year commencing on 1 October 2010, you:

EITHER

Yes / No

a) **Agree** to set a TAC of 537.6 t (MFish preferred option) and within this:

xii) **set** an allowance for customary fishing of 1 t;

xiii) **set** an allowance for recreational fishing of 195 t;

xiv) **set** an other sources of fishing-related mortality at 6.5 t; and

xv) **retain** a TACC of 335.1 t.

OR

Yes / No

b) **Agree** to set a TAC of 553 t and within this:

i) **set** an allowance for customary fishing of 1 t;

ii) **set** an allowance for recreational fishing of 195 t;

iii) **set** an other sources of fishing-related mortality at 7 t; and

iv) **increase** the TACC from 335.1 t to 350 t.

OR

Yes / No

c) **Agree** to set a TAC of 573.5 t and within this:

i) **set** an allowance for customary fishing of 1 t;

ii) **set** an allowance for recreational fishing of 195 t;

iii) **set** an other sources of fishing-related mortality at 7.5 t; and

iv) **increase** the TACC from 335.1 to 370 t.

AND

d) **Agree** to increase the interim deemed value rate from $1.15 to $2.30 — Yes / No

AND

e) **Agree** to increase the annual deemed value rate from $2.30 to $2.80 — Yes / No

Bladder Kelp (KBB 3G)

MFish recommends that, for the KBB3G fishery, for the fishing year commencing on 1 October 2010, you:

EITHER

a) **Agree** to set a TAC of 1866 t and within this: — Yes / No

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 1864.8 t.

OR

b) **Agree** to set a TAC of 1238 t (MFish preferred option) and within this: — Yes / No

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 1236.8 t.

OR

c) **Agree** to set a TAC of 377 t and within this: — Yes / No

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 tonne, and;

iv) **Set** a TACC of 375.8 t.

OR

d) **Agree** to set a TAC of 41.2 t and within this: Yes / No

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 40 t.

OR

e) **Agree** to set a TAC of 18.2 t and within this set: Yes / No

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 17 t.

Bladder Kelp (KBB 4G)

MFish recommends that, for the KBB 4G fishery, for the fishing year commencing on 1 October 2010, you:

EITHER

a) **Agree** to set a TAC of 411 t and within this: Yes / No

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 409.8 t.

OR

b) **Agree** to set a TAC of 274 t (*MFish preferred option*) and within this: Yes / No

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 272.8 t.

OR

c) **Agree** to set a TAC of 26.2 t and within this: Yes / No

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and,

iv) **Set** a TACC of 25 t.

OR

d) **Agree** to set a TAC of 2.2 t and within this: Yes / No

i) **Set** a customary allowance of 0.1 t;

ii) **Set** a recreational allowance of 0.1 t;

iii) **Set** an allowance for other sources of fishing related mortality of 1 t, and;

iv) **Set** a TACC of 1 t.

Bladder Kelp (KBB 3G and 4G)

MFish recommends that, for the KBB 3G and KBB 4G fishery, for the fishing year commencing on 1 October 2010, you:

EITHER

e) **Agree** to set an annual deemed value of $1.00 per kg (excluding GST) for both KBB3G and KBB4G (*MFish preferred option*), and; Yes / No

f) **Agree** to set an interim deemed value of $0.50 per kg (excluding GST) for both KBB3G and KBB4G (*MFish preferred option*); Yes / No

OR

g) **Agree** to set an annual deemed value of $4.00 per kg (excluding GST), and Yes / No

h) **Agree** to set an interim deemed value of $2.00 per kg (excluding GST); Yes / No

AND

i) **Agree** that standard differential deemed value rates are used in KBB3G and KBB4G but no overfishing thresholds be set at this time**.** Yes / No

AND

j) **Agree** to implement a maximum cutting depth of 1.2 m; Yes / No

AND

k) **Note** that the Chief Executive will require finer spatial scale reporting; Yes / No

AND

l) **Support** development of a Memorandum of Understanding, or similar, between MFish and industry quota-holders to develop a voluntary harvesting strategy. Yes / No

Stargazer (STA 7)

MFish recommends that, for the STA 7 fishery, for the fishing year commencing on 1 October 2010, you

EITHER

a) **Agree** to increase the TAC from 1000 t to 1025 t and within this: Yes / No

i) **retain** an allowance for customary fishing of 1 t;

ii) **retain** an allowance for recreational fishing of 2 t;

iii) **set** an other sources of fishing-related mortality at 25 t; and

iv) **retain** a TACC of 997 t.

OR

b) **Agree** to increase the TAC from 1000 t to 1072 t (MFish preferred option) and within this: Yes / No

i) **retain** an allowance for customary fishing of 1 t;

ii) **retain** an allowance for recreational fishing of 2 t;

iii) **set** an other sources of fishing-related mortality at 27 t; and

iv) **increase** the TACC from 997 t to 1042 t.

OR

c) **Agree** to increase the TAC from 1000 t to 1128 t (MFish preferred option) and within this: Yes / No

i) **retain** an allowance for customary fishing of 1 t;

ii) **retain** an allowance for recreational fishing of 2 t;

iii) **set** an other sources of fishing-related mortality at 28 t; and

iv) **increase** the TACC from 997 t to 1097 t.

AND

d) **Agree** to retain the following deemed value rates Yes / No

Current differential rates	
Catch in excess of ACE holdings (%)	**Current deemed value rate for STA7**
20	$1.74 per kg
40	$2.03 per kg
60	$2.32 per kg
80	2.61 per kg
100	2.90 per kg

AND

e) **Agree** to increase the interim deemed value rate from 50% to 90% of the annual deemed value rate for STA 7 (MFish preferred option) Yes / No

OR

f) **Agree** to retain the existing interim deemed value rate. Yes / No

Trevally (TRE 1)

MFish recommends that, for the TRE 2 fishery, for the fishing year commencing on 1 October 2010, you:

EITHER

a) **Agree** to set a TAC of 349 t (MFish preferred option) and within this: Yes / No

   i) **set** an allowance for customary fishing of 1 t;

   ii) **set** an allowance for recreational fishing of 100 t;

   iii) **set** an other sources of fishing-related mortality at 7 t; and

   iv) **retain** a TACC of 241 t.

OR

b) **Agree** to set a TAC of 371 t (MFish preferred option) and within this: Yes / No

   i) **set** an allowance for customary fishing of 1 t;

   ii) **set** an allowance for recreational fishing of 100 t;

   iii) **set** an other sources of fishing-related mortality at 8 t; and

   iv) **increase** the TACC from 241 t to 262 t.

OR

c) **Agree** to set a TAC of 402 t and within this: Yes / No

   i) **set** an allowance for customary fishing of 1 t;

   ii) **set** an allowance for recreational fishing of 100 t;

   iii) **set** an other sources of fishing-related mortality at 9 t; and

   iv) **increase** the TACC from 241 to 292 t.

AND

d) **Agree** to increase the interim deemed value rate from $0.55 to $0.70 Yes / No

AND

e) **Agree** to increase the annual deemed value rate from $1.10 to $1.25 Yes / No

AND

f) **Agree** to increase the differential deemed value rates as per the following table: Yes / No

Differential rates	
Catch in excess of ACE holdings (%)	**Deemed value rate**
10- 20	$3.50 per kg
20+	$5.00 per kg

Deepwater Sustainability Round

Black Cardinalfish (CDL 2)

MFish recommends that, for the fishing year commencing on 1 October 2010, you:

EITHER

Option 1 (status quo): Agree to retain the TAC for CDL 2 at 1,780 tonnes and within the TAC: Yes / No

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Retain an allowance of 160 tonnes for other sources of fishing-related mortality;

iii) Retain the TACC at 1,620 tonnes.

OR

Option 2 (MFish recommendation): Agree to reduce the TAC for CDL 2 from 1,780 tonnes to 1,120 tonnes and within the TAC: Yes / No

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Set an allowance of 100 tonnes for other sources of fishing-related mortality;

iii) Set the TACC at 1,020 tonnes.

AND, EITHER

Agree to retain the current deemed value rates for CDL 2 as follows: Yes / No

i) Annual deemed value rate: $0.30 per kg.

ii) Interim deemed value rate: $0.15 per kg

iii) Differential deemed value rates do not apply.

OR

Agree to set the deemed value rates for CDL 2 as follows: Yes / No

i) Increase the annual deemed value from $0.30 to $0.52 per kg;

ii) Increase the interim deemed value from $0.15 to $0.26 per kg;

iii) Set a differential deemed value of $0.60 per kg for all catch that is 20% in excess of ACE holdings.

Hoki (HOK 1)

MFish recommends that, for the fishing year commencing on 1 October 2010, you agree to:

EITHER

Option 1 (Status Quo) Yes / No

Retain the existing TAC for HOK1 at 111,140 and within the TAC:

i) Retain allowances for customary Maori and recreational fishing interests of 20 tonnes apiece;

ii) Retain an allowance of 1,100 tonnes for other sources of fishing-related mortality;

iii) Retain the TACC at 110,000 tonnes.

AND

i) Retain the existing deemed value rates Yes / No

OR

Option 2 (MFish Recommended Option) Yes / No

Increase the TAC for HOK1 from 111,140 tonnes to 121,240 tonnes and within the TAC:

i) Retain allowances for customary Maori and recreational fishing interests of 20 tonnes apiece;

ii) Set an allowance of 1,200 tonnes for other sources of fishing-related mortality;

iii) Set the TACC at 120,000 tonnes.

AND

i) Retain the existing deemed value rates Yes / No

Orange roughy (ORH 3B)

MFish recommends that, for the fishing year commencing on 1 October 2010, you:

EITHER

Option 1 (status quo): Agree to retain the TAC for ORH 3B at 8,350 tonnes and within the TAC: Yes / No

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Retain an allowance of 400 tonnes for other sources of fishing-related mortality;

iii) Retain the TACC at 7,950 tonnes.

AND

Note that as part of managing the ORH 3B fishery, by way of other non-statutory management measures, MFish will request that Industry implement the following sub-stock catch limits within the TACC of 7,950 tonnes: Yes / No

i) The catch limit for the East and South Chatham Rise sub-stock would remain at 5,100 tonnes;

ii) The Industry research survey allowance for the East and South Chatham Rise sub-stock would remain unchanged at 250 tonnes in addition to the sub-stock catch limit;

iii) The catch limit for the Sub-Antarctic sub-stock would remain at 1,850 tonnes;

iv) The catch limit for the Northwest Chatham Rise sub-stock would remain at 750 tonnes;

v) The catch limit for the Puysegur sub-stock would remain at 0 tonnes.

OR

Option 2 (MFish recommendation): Agree to reduce the TAC for ORH 3B from 8,350 tonnes to 4,840 tonnes and within the TAC: Yes / No

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Set an allowance of 230 tonnes for other sources of fishing-related mortality;

iii) Set the TACC at 4,610 tonnes.

AND

Note that as part of managing the ORH 3B fishery, by way of other non-statutory management measures, MFish will request that Industry implement the following sub-stock catch limits within the TACC of 4,610 tonnes: Yes / No

i) The catch limit for the East and South Chatham Rise sub-stock would be set at 2,960 tonnes (a reduction of 2,140 t or 42%);

ii) The Industry research survey allowance for the East and South Chatham Rise sub-stock would remain unchanged at 250 tonnes in addition to the sub-stock catch limit;

iii) The catch limit for the Sub-Antarctic sub-stock would be set at 500 tonnes (a reduction of 1,350 tonnes or 73%);

iv) The catch limit for the Northwest Chatham Rise sub-stock would remain at 750 tonnes;

v) The catch limit for the Puysegur sub-stock would increase from 0 tonnes to 150 tonnes specifically for research to monitor the status of the stock.

AND, EITHER

Agree to retain the current deemed value rates for ORH 3B as follows: Yes / No

i) The annual deemed value rate is $4.00 per kg.

ii) The interim deemed value rate is $2.00 per kg.

iii) A differential deemed value rate of $5.00 per kg applies to catch in excess of 10% of ACE holdings.

OR

Agree to amend the deemed value rates for ORH 3B as follows: Yes / No

i) Increase the annual deemed value rate from $4.00 to $5.00

per kg.

ii) Increase the interim deemed value rate from $2.00 to $2.50 per kg.

iii) Increase the differential deemed value rate from $5.00 to $6.25 per kg for all catch in excess of 10% of ACE holdings.

Orange roughy (ORH 7A)

MFish recommends that, for the fishing year commencing on 1 October 2010, you:

EITHER

Option 1 (status quo): Agree to retain the TAC for ORH 7A of 1 tonne and within the TAC: Yes / No

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Retain a nil allowances for other sources of fishing-related mortality;

iii) Retain the TACC of 1 tonne.

OR

Option 2 (MFish recommendation): Agree to increase the TAC for ORH 7A from 1 tonne to 525 tonnes and within the TAC: Yes / No

i) Retain nil allowances for customary Maori and recreational fishing interests;

ii) Set an allowance of 25 tonnes for other sources of fishing-related mortality;

iii) Set the TACC at 500 tonnes.

AND

Agree to retain the current deemed value rates for ORH 7A. Yes / No

Patagonian Toothfish (PTO 1)

MFish recommends that you agree to:

Set a TAC of 50 tonnes for PTO1 and within this set: Yes / No

i) a customary allowance of 0 tonnes;
ii) a recreational allowance of 0 tonnes;
iii) an allowance for other sources of fishing-related mortality of 0.5 tonnes; and
iv) a TACC of 49.5 tonnes.

AND

Set an annual deemed value rate of $12.50 per kg, an interim deemed value rate of $11.25 per kg, and the differential deemed value rate detailed in the table below for PTO1 from 1 October 2010: Yes / No

Catch in excess of ACE holdings (%)	Recommended deemed value rate for PTO1 ($/kg
10	$20.00

Rubyfish (RBY 4)

MFish recommends that, for the fishing year commencing on 1 October 2010, you agree to either:

EITHER

Option 1 – Increase the TAC to 6.5 tonnes Yes / No

i) Increase the existing RBY4 TAC from 6 to 6.5 tonnes
ii) Introduce an allowance of 0.5 tonnes for other sources of fishing-related mortality; and
iii) Retain the existing TACC at 6 tonnes

OR

Option 2 – Increase the TAC to 19 tonnes (MFish recommendation) Yes / No

i) Increase the RBY4 TAC from 6 to 19 tonnes
ii) Introduce an allowance of 1 tonne for other sources of fishing-related mortality; and
iii) Increase the TACC from 6 tonnes to 18 tonnes.

AND

Agree to set the following deemed value rates for RBY4 for the 2010/11 fishing year: Yes / No

i) Retain the annual deemed value rate at $0.42 per kg

ii) Retain the interim deemed value rate at $0.21 per kg

iii) Introduce differential deemed value rates as per Table 4:

Table 4: Recommended differential rates for RBY4

Recommended differential rates	
Catch in excess of ACE holdings (%)	Recommended RBY4 deemed value rates ($ per kg)
20	0.50
40	0.59
60	0.67
80	0.76
100	0.84

Deemed Value Round

Black Cardinalfish (CDL 3 & 4)

MFish recommends that you implement the following deemed value rates in CDL3 for the 2010-11 fishing year: Yes / No

i) Annual deemed value rates to increase from $0.30 per kg to $0.52 per kg

ii) Interim deemed value rate to increase from $0.15 per kg to $0.26 per kg

ii) A single differential deemed value rate of $0.60 per kg to apply to all catch that is 20% in excess of ACE holdings

MFish recommends that you implement the following deemed value rates in CDL4 for the 2010-11 fishing year:

i) Annual deemed value rates to remain unchanged at $0.52 per kg

ii) Interim deemed value rates to remain unchanged at $0.26 per kg

iii) A single differential deemed value rate of $0.60 per kg to apply to all catch that is 20% in excess of ACE holdings.

Hake (HAK 1 & 4)

MFish recommends you approve the following deemed value rates for HAK1 for the 2010-11 fishing year: Yes / No

i) Annual deemed value rate to increase from $1.17 per kg to $1.60 per kg

ii) Interim deemed value rate to increase from $0.59 per kg to $0.80 per kg

iii) Differential deemed value rates will be adjusted to reflect the proposed new annual rate, as outlined in table 2 below:

MFish recommends you approve the following deemed value rates for HAK4 for the 2010-11 fishing year: Yes / No

i) Annual deemed value rate to increase from $1.25 per kg to $1.60 per kg

ii) Interim deemed value rate to increase from $0.63 per kg to $0.80 per kg

iii) Differential deemed value rates will be adjusted to reflect the proposed new annual deemed value rate, as outlined in table 2 below:

Table 2: Recommended differential deemed value rates for HAK1 and HAK4

Catch in excess of ACE holdings (%)	Current differential rates		Proposed differential rates	
	Current deemed value rate for HAK1 ($)	Current deemed value rate for HAK4 ($)	Catch in excess of ACE holdings (%)	Proposed deemed value rate for HAK1 and HAK4 ($)
20	1.404 per kg	1.50 per kg	20	1.92 per kg
40	1.638 per kg	1.75 per kg	40	2.24 per kg
60	1.872 per kg	2.00 per kg	60	2.56 per kg
80	2.106 per kg	2.25 per kg	80	2.88 per kg
100	2.340 per kg	2.50 per kg	100	3.20 per kg

Ribaldo (RIB 7)

MFish recommends you approve the following deemed value rates for RIB7 for the 2010-11 fishing year: Yes / No

i) Annual deemed value rate remains unchanged at $0.80 per kg

ii) Interim deemed value rate remains unchanged at $0.40 per kg

iii) Differential deemed value rates will be adjusted as outlined in table 3 below:

Table 3: Proposed differential deemed value rates for RIB7

Current differential rates		Proposed differential rates	
Catch in excess of ACE holdings (%)	**Current deemed value rates for RIB7 ($)**	**Catch in excess of ACE holdings (%)**	**Proposed deemed value rates for RIB7 ($)**
10	1.20	10	1.20
20	2.00	20	2.50

Trevally (TRE 1)

MFish recommends you approve the following deemed value rates for TRE1 for the 2010-11 fishing season: Yes / No

i) Annual deemed value rate to increase from $1.10 per kg to $1.25 per kg.

ii) Interim deemed value rate to increase from $0.55 per kg to $0.70 per kg.

iii) Standard differential deemed value rates adjusted to reflect the proposed new annual deemed value rate, outlined in the table below.

Table 4: Proposed differential deemed value rates for TRE1

Current differential rates		Proposed differential rates	
Catch in excess of ACE holdings (%)	**Current deemed value rate for TRE1 ($)**	**Catch in excess of ACE holdings (%)**	**Proposed deemed value rate for TRE1 ($)**
20	1.32 per kg	20	1.50 per kg
40	1.54 per kg	40	1.75 per kg
60	1.76 per kg	60	2.00 per kg
80	1.98 per kg	80	2.25 per kg
100	2.20 per kg	100	2.50 per kg

Rough Skate (RSK 8) and Smooth Skate (SSK 8)

RSK 8

MFish recommends you make no change to RSK8 deemed values for the 2010-11 season — Yes / No

SSK 8

MFish recommends you make no change to SSK8 deemed values for the 2010-11 season — Yes / No

Snapper (SNA8)

MFish recommends you make no change to SNA8 deemed values for the 2010-11 season. — Yes / No

Kingfish (KIN8)

MFish recommends you make no change to KIN8 deemed values for the 2010-11 year — Yes / No

Red Gurnard (GUR3 and GUR7)

MFish recommends you make no change to GUR3 and GUR7 deemed value rates for the 2010-11 year. — Yes / No

Gavin Lockwood
DCE Fisheries Management

APPROVED/ NOT APPROVED/ APPROVED AS AMENDED

Hon Phil Heatley
Minister of Fisheries and Aquaculture