Ministry for Primary Industries
Manatū Ahu Matua

Review of Management Controls for Scampi 2 (SCI 2)

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INTRODUCTION

1 This Initial Position Paper provides the Ministry for Primary Industries (the Ministry's) initial proposals relating to catch limits and allowances for SCI 2, to apply from 1 October 2013.

2 The Ministry has developed this IPP for the purpose of consultation as required under the Fisheries Act 1996 (the Act). The proposals outlined in the paper are preliminary and are provided as the basis for consultation with stakeholders.

3 In August 2013, the Ministry will provide a Final Advice Paper to the Minister for Primary Industries. The FAP will summarise the Ministry's and stakeholder's views on the proposed deemed value rate changes and make recommendations to the Minister. A copy of the FAP and the Minister's letter setting out his final decisions will be posted on the MPI website as soon as these become available.

DEADLINE FOR SUBMISSIONS

4 The Ministry welcomes written submissions on the proposals contained in the IPP. All written submissions must be received by the Ministry no later than 5pm on **Friday, 9 August 2013**.

Written submissions should be sent directly to:

Deepwater Fisheries Management
Ministry for Primary Industries
P O Box 2526
Wellington 6011

or emailed to fmsubmissions@mpi.govt.nz

Official Information Act 1982

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

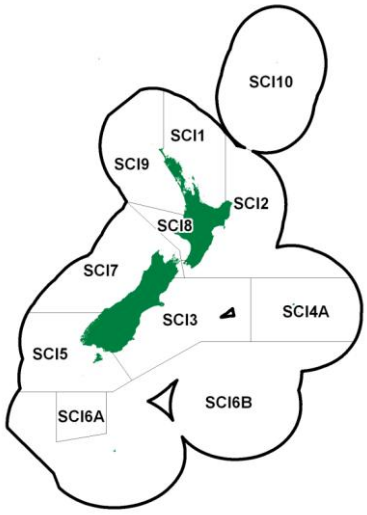

Figure 1: Quota Management Areas (QMAs) for Scampi

INTRODUCTION

6 The Ministry for Primary Industries (MPI) is seeking tangata whenua and stakeholder information and views to inform a review of commercial catch limits for scampi in Quota Management Area SCI 2 (Figure 1).

7 Results from the 2013 stock assessment indicate SCI 2 biomass is approximately 76% of un-fished biomass (B_0) which is above the default management target of 40% B_0. Consequently, MPI proposes an increase of the total allowable catch (TAC) in SCI 2 to utilise the increase in scampi abundance. The specific options proposed for the TAC, total allowable commercial catch (TACC) and associated allowances are provided in Table 1.

Table 1: Proposed TACs, TACCs and allowances for SCI 2

Option			Allowances		
	TAC (t)	TACC (t)	Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality (t)
Option 1 (Status Quo)	105	100	0	0	5
Option 2	120	114	0	0	6
Option 3	140	133	0	0	7
Option 4	180	171	0	0	9
Option 5	200	190	0	0	10

8 There is no known customary Maori or recreational take of scampi and it is proposed to retain zero allowances for these sectors. In addition, MPI proposes to maintain the allocation for other sources of fishing related-mortality at 5% of the TACC. MPI is not proposing any changes to SCI 2 deemed values rates.

BACKGROUND INFORMATION

Biological characteristics of scampi

9 Scampi are burrowing crustaceans that are widely distributed around the coast of New Zealand, usually between 200-500 m depth. Studies estimate that scampi are ~3-4 years at 30 mm orbital carapace length and may live for 15-20 years. However, the size and growth of scampi within New Zealand has been shown to differ significantly among the regional fish stocks. Scampi off the Wairarapa coast (SCI 2) achieve sexual maturity around 30-36 mm.

SCI2 Fishery

10 The SCI 2 fishery in the Wairarapa developed through the late 1980s and early 1990s and is now considered fully developed. The number of fishing vessels in SCI 2 has fluctuated, with three to six vessels fishing in the area over the past five years. The entire New Zealand scampi fleet currently comprises eight vessels 20-40 m in length. Vessels catch scampi by using a double or triple net configuration.

11 A competitive catch limit was set for SCI 2 in 1991/92 of 246 tonnes. This was decreased to 200 tonnes when scampi was introduced into the quota management system (QMS) in 2004. The TACC was further decreased in 2011/12 to 100 tonnes due to sustainability concerns.

12 During the early 1990s, landings were stable and CPUE trended upward; however, both declined steadily after this until the early 2000s (Figures 2 and 3). Biomass has increased steadily since 2008. Landings over the past five years have averaged 93 tonnes, however for the first time in seven years landings exceeded 100 tonnes in 2009/10 prior to the decrease in TACC.

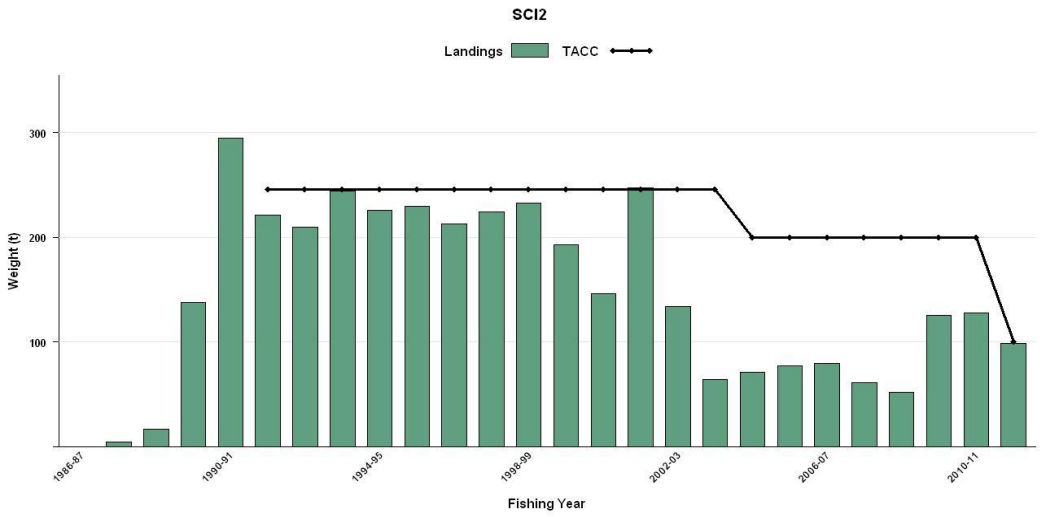

Figure 2: Reported Catch Landings and TACC (t) for SCI2 from fishing year 1986/87 to the 2011/12 fishing year

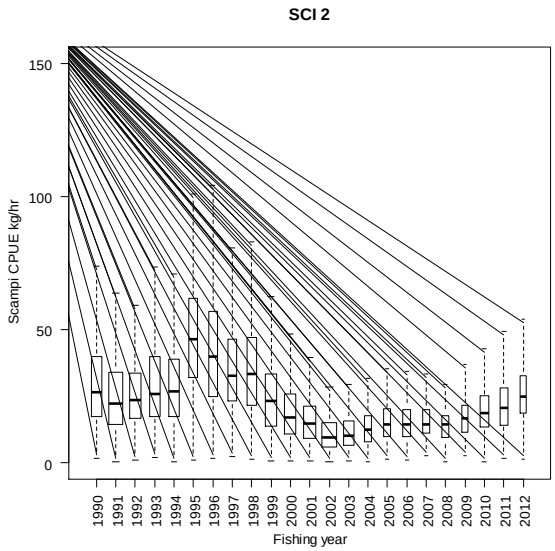

Figure 3: Unstandardised catch per unit effort (CPUE) (kg/hr) for SCI2 from fishing year 1990 to the 2011/12 fishing year. Bars represent 95% confidence intervals and the dark line indicates the median CPUE

Management Approach

13 The scampi fishery is managed within the National Fisheries Plan for Deepwater and Middle-depths Fisheries (National Deepwater Plan) as a Tier 1 species. As part of the National Fisheries Plan, a specific chapter for the scampi fishery is being developed. The necessity for a species-specific harvest strategy has not yet been assessed for scampi. As such, New Zealand's default target of 40% B_0 and associated reference points are used in SCI 2.[1]

Previous Stock Assessment and Stock Status

14 The last stock assessment for scampi occurred in 2011. The stock assessment indicated that, although the level of commercial catch occurring at the time (<100 tonnes) was sustainable, catch at the TACC of 200 tonnes would cause the stock to drop below the target of 40% B_0. Furthermore, under a recent recruitment scenario, the model estimated stock biomass was likely (>60% probability) to drop below the soft limit of 20% B_0 under the 200 tonnes TACC within five years. The TAC was subsequently decreased to 105 tonnes with a 100 tonne TACC, bringing the TACC back in line with current catch levels.

15 Uncertainties associated with the previous stock assessment came from a limited understanding of scampi growth and recruitment into the fishery. No new information has been ascertained on either of these topics to reduce model uncertainty. However, other abundance indices have changed since the 2011 assessment which the model interprets as the result of a recent above average recruitment. The increase in biomass is seen in both photographic/trawl surveys and industry CPUE giving more confidence that the current biomass has increased. This is discussed in more detail in the following section.

RATIONALE FOR MANAGEMENT INTERVENTION

16 An update of the SCI 2 stock assessment was finalised and accepted by the Shellfish Working Group and Plenary in May 2013. The stock assessment indicates that the current (2012) SCI 2 biomass is estimated to be 74% B_0 which is above the level that will support

[1] Default reference points are specified in the Ministry of Fisheries (2008) Harvest Strategy Standard for New Zealand Fisheries.

maximum sustainable yield (MSY) and is very likely (>90% probability) to be at or above the default target of 40% B_0. Projections using various catch levels indicate that the stock will remain at or above the management target with high likelihood. Given these results, MPI is confident that there is an opportunity to utilise this recent above average recruitment. Furthermore, calculations of fishing mortality (F) indicate that overfishing within SCI 2 is very unlikely (<10%) to be occurring (Fig 4).

17 The major sources of uncertainty with this year's assessment (similar to those of previous assessments) come from the lack of information on the growth rate of scampi, the catchability of scampi, and how many scampi occupy one burrow. These uncertainties, specifically those around growth, add risk to any increase in utilisation as it is uncertain how and when another above average recruitment year may occur.

18 Projections were calculated for annual catch levels of 100–200 tonnes until 2018. All catch levels are projected to maintain biomass at or above the management target (40% B_0) until 2018 with 99-90% probability. However, at all catch levels, even status quo, it is projected that biomass will decrease from that of current levels. The rate at which this decrease occurs depends on the overall catch level (i.e. a TAC of 200 tonnes will decrease biomass faster than a TAC of 100 tonnes).

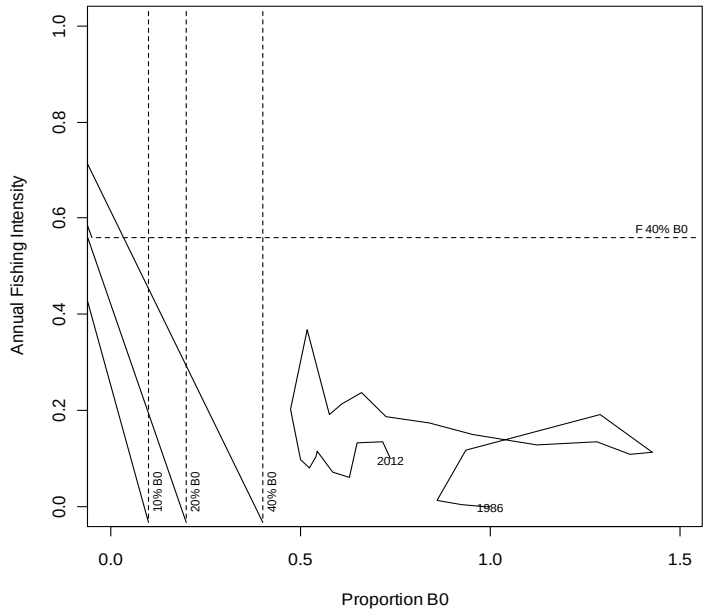

Figure 4: The proportion of initial scampi biomass (B_0) in SCI 2 in relation to mortality caused by annual fishing intensity. The management target (40% B_0), soft limit (20% B_0), and hard limit (10% B_0) are indicated by dotted vertical lines. The horizontal line indicates the level of fishing mortality that would result in the stock biomass fluctuating at the management target. A healthy fish stock will remain or be brought back to the lower right hand side of the figure.

PROPOSED MANAGEMENT MEASURES

19 Given the stock assessment results discussed above, MPI is consulting on management options which propose a range of increases in the TAC, TACC, and allowances for SCI 2 (Table 2).

Table 2: Proposed TACs, TACCs, and allowances for SCI 2

Option	TAC (t)	TACC (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing related mortality (t)
Option 1 (Status Quo)	105	100	0	0	5
Option 2	120	114	0	0	6
Option 3	140	133	0	0	7
Option 4	180	171	0	0	9
Option 5	200	190	0	0	10

20 The TAC for SCI 2 is set under section 13(2) of the Fisheries Act 1996 (the Act). Section 13 requires the Minister for Primary Industries (the Minister)[2] to set a TAC to maintain the stock at or above a level that can produce maximum sustainable yield (B_{MSY}).

21 MPI considers all the options proposed are consistent with the objective of maintaining the SCI 2 stock at or above a level that can produce the maximum sustainable yield. However as catch levels increase there is a greater chance that the stock biomass will drop below the management target of 40% B_0.

22 All catch levels presented below will result (with 55-83% probability) in scampi biomass decreasing over the next five years. Details of the projections are set out in the discussion of options below (Fig 5 and Table 3).

Option 1 (Status Quo)

23 Option 1 proposes the TAC remains at the current level of 105 tonnes, with a 100 tonne TACC, and a five tonne allowance for other sources of fishing-related mortality.

24 Last year landings were just under the TACC with 99 tonnes of scampi landed. Given an export price of $29.98 ($NZ/kg) this resulted in approximately $3.0 M in export revenue.[3] Projections indicate that with catch levels at the current TACC, the biomass of the stock will stay above the target until 2018 with 99% probability (Fig 5).[4]

Option 2

25 Option 2 proposes to:

a. Increase the TAC from 105 tonnes to 120 tonnes.
b. Increase the TACC from 100 tonnes to 114 tonnes (an increase of 14%).
c. Increase the allowance for other sources of fishing-related mortality from five tonnes to six tonnes.

26 An increase of 14 tonnes may result in an additional $400,000 in export revenue, given the recent export price. Projections indicate that with a TAC of 120 tonnes, the biomass of the stock will remain above the target until 2018 with 98% probability (Figure 5).

[2] The Minister for Primary Industries now exercises the powers and responsibilities of the Minister of Fisheries under the Fisheries Act 1996.

[3] Based export figures for 2012 calendar year of $25.98 / kg. Scampi does not have its own Harmonised System (HS) code and therefore is captured under shrimps & prawns. No precise product form is assigned therefore a greenweight export price cannot be calculated. The $25.98 / kg figure was calculated for Other Crustacea Frozen as this export form accounted for 99.9% of export earnings and 99.9% of export volume for scampi (shrimps & prawns) in the 2012 calendar year. Precise revenue loss is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state.

[4] When discussing projections stock biomass refers to spawning stock biomass or SSB.

Option 3

27 Option 3 proposes to:

a. Increase the TAC from 105 tonnes to 140 tonnes.
b. Increase the TACC from 100 tonnes to 133 tonnes (an increase of 33%).
c. Increase the allowance for other sources of fishing-related mortality from five tonnes to seven tonnes.

28 An increase of 33% may result in a $970,000 increase in export revenue. Projections indicate that, over the next five years, a TAC of 140 tonnes will keep stock biomass above the target with 97% probability (Figure 5). A TAC of 140 will fish down the recent recruitment around 10% faster than status quo catch levels. This option is most consistent with commercial catch levels prior to the decrease in the TAC in 2011.

Option 4

29 Option 4 proposes to:

a. Increase the TAC from 105 tonnes to 180 tonnes.
b. Increase the TACC be from 100 tonnes to 171 tonnes (an increase of approximately 71%).
c. Increase the allowance for other sources of fishing-related mortality from five tonnes to nine tonnes.

30 The 71 tonne additional catch may result in around $2.0 m in additional export revenue. A TAC of 180 tonnes is projected to keep the stock at or above the target with 93% probability. However this is the first option where the bounds of the projections dip below the management target (Figure 5).

Option 5

31 Option 5 proposes to:

a. Increase the TAC from 105 tonnes to 200 tonnes.
b. Increase the TACC from 100 tonnes to 190 tonnes (an increase of 90%).
c. Increase the allowance for other sources of fishing related mortality from five tonnes to 10 tonnes.

32 An increase of 90 tonnes may result in additional export revenue of $2.6 m. Projections indicate that even with a TAC of 200 tonnes, there is a 90% probability that stock biomass will remain at the management target (Figure 5). However, the uncertainty bounds of the projections for this catch limit do drop below the management target (Figure 5).

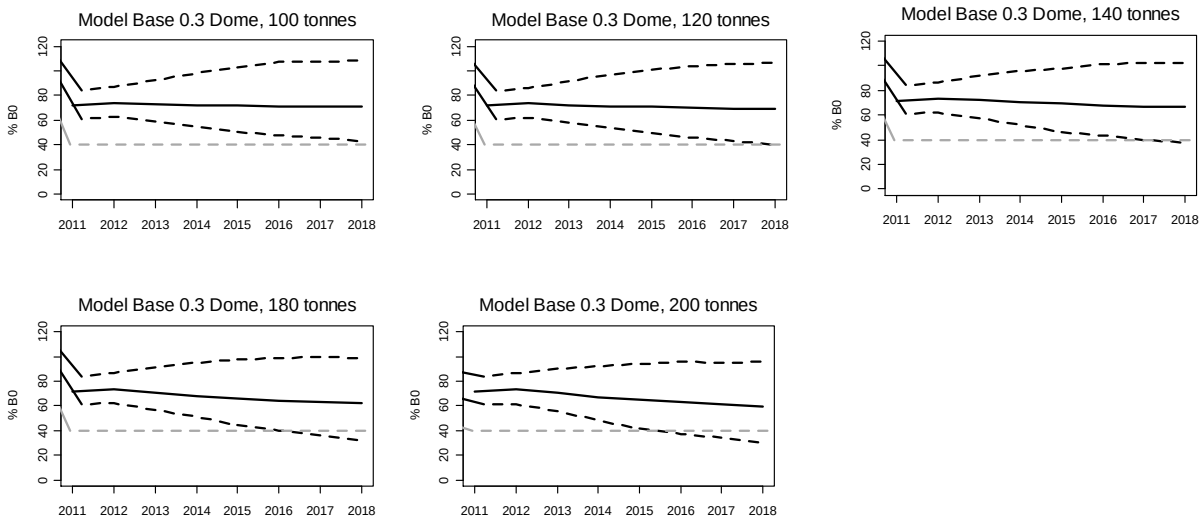

Figure 5: Projected spawning stock biomass for a range of possible catch limits out until 2018, with dotted lines indicating the 95% confidence bounds around the median estimate (solid line)

Table 3: Probabilities of spawning stock biomass being below or above respective management limits or target; also shown in the probability of biomass (B) in 2018 being less than that in 2012 under different catch levels until 2018

	Catch Levels							
2018	**100**	**110**	**120**	**130**	**140**	**160**	**180**	**200**
Prob < Hard Limit (10% B_0)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prob < Soft Limit (20% B_0)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prob > Target (40% B_0)	0.99	0.99	0.98	0.97	0.97	0.95	0.93	0.90
Prob B2018 < B2012	0.55	0.56	0.60	0.64	0.67	0.73	0.77	0.83

OTHER KEY CONSIDERATIONS

33 When making a decision concerning the TAC for a stock, the Minister for Primary Industries[5] (the Minister) must have regard to interdependence of stocks, the biological characteristics (discussed above) and any environmental conditions affecting the stock.

34 The key environmental interactions associated with the SCI 2 fishery are discussed below with reference to the likely impacts of the proposed management options.

Fish bycatch

35 The scampi fishery has a high level of bycatch with scampi making up around 17% of catch in all scampi target tows since 1 October 1990. The main bycatch species or species groups were javelinfish (16%), other rattails (13%), and sea perch (8.4%).[6] MPI acknowledges that levels of bycatch are likely to increase under the measures proposed, however there are processes in place to monitor and manage any risks associated with this increase in bycatch.

[5] The Minister for Primary Industries now exercises the powers and responsibilities of the Minister of Fisheries under the Fisheries Act 1996.

[6] Information is based on observer records not industry catch returns.

Seabirds

36 MPI has recently undertaken an assessment of the risk to seabird populations from commercial fisheries.[7] This research has identified that the scampi fisheries do contribute to the risk score for the Salvin's albatross and flesh-footed shearwater, two of the four most at-risk seabirds. However, the proportion of the total risk to both species attributed to scampi fisheries is small as scampi fishing is not the most significant risk to these birds.[8] In addition, the majority of this risk is thought to be generated from the other scampi fisheries, rather than SCI 2.

37 MPI acknowledges that with increased fishing effort more seabirds may be incidentally captured by the scampi fleet within SCI 2. Management measures are being developed and implemented to mitigate and minimise seabird interactions with the scampi fleet. These objectives are in line with MPI's National Plan of Action for Seabirds which was released in April 2013.

Marine mammals

38 Incidental captures of marine mammals also occur within the scampi fishery. Fur seal and sea lion captures have been reported by observers; however, these captures are isolated within the SCI 3 and SCI 6A fisheries respectively. Given the distribution and known capture rate of fur seals and sea lions, MPI considers marine mammal captures to be a low risk in the SCI 2 fishery that will not materially change with any of the options proposed within this paper.

Benthic impacts

39 Bottom trawling for scampi is known to have an impact on benthic habitats.[9] However, the scampi fishery has evolved to use lighter bottom gear with multiple rigs which mitigates some of this impact. Furthermore, fragile benthic invertebrate communities are found primarily on hard substrates that do not occur within the core fishing area of SCI 2, where soft sediment and mud substrate predominates.

40 The scampi fishery is constrained to a specific depth band and substrate. As a result, an increase in scampi abundance does not result in a widening of the scampi fishing area, or spreading of scampi fishing into other benthic habitats, but rather an increase in the density of scampi within the already exploited area.

41 MPI acknowledges that the options proposed in this IPP will most likely result in increased fishing effort and therefore increased contact with the benthos. However, MPI is satisfied that the risk this increase in effort will have on the benthos habitat is low.

FUTURE CONSIDERATIONS

42 The next survey on the SCI 2 stock will be conducted during the 2014/15 fishing year resulting in a stock assessment being completed in the 2015/16 fishing year. While current surveys indicate an increase in abundance, there is uncertainty as to when another above average scampi recruitment may enter the fishery. Given the relatively short time period between surveys, MPI is confident that appropriate management action will be possible if lower than average recruitment occurs within the next two years.

[7] Yvan Richards, Edward R. Abraham & Dominique Filippi (2012). Assessment of the risk of commercial fisheries to New Zealand seabirds 2006-07 to 2010-11. PRO2010/02.

[8] Risk to seabirds from the scampi fisheries comprises 4% of the total risk score for the Salvin's albatross and 7% of the total risk score for the flesh-footed shearwater.

[9] Cryer, M., Hartill, B., O'Shea, S., (2002) Modification of marine benthos by trawling: toward a generalization for the deep ocean? Ecol. Apps. 23(6):1824-1839.

CONCLUSION

43 MPI is confident that a utilisation opportunity exists in the SCI 2 fishery and is consulting on a range of options which will determine the speed at which the fishery utilises the above average recent scampi recruitment to SCI 2.