

# Review of Sustainability Measures for Scampi (SCI 1) for 2020/21

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### 1 Stocks being reviewed

#### Scampi (SCI 1)

Metanephrops challengeri

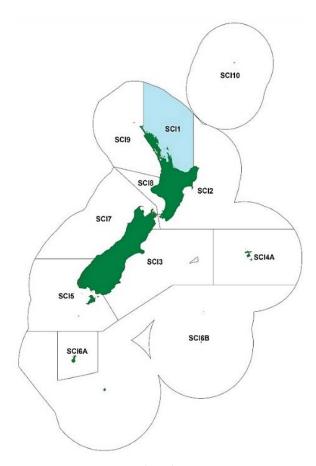


Figure 1: Quota Management Area (QMA) for scampi, with SCI 1 highlighted

### 2 Summary

- 1. Fisheries New Zealand is reviewing the sustainability measures for scampi in Quota Management Area 1 (SCI 1) for the 1 October 2020 fishing year (Figure 1).
- 2. The best available information indicates that the scampi stock in SCI 1 has increased in abundance and a utilisation opportunity now exists.
- 3. Commercial catches of scampi in SCI 1 have been stable around the TACC which has remained unchanged since scampi was introduced into the Quota Management System on 1 October 2004.
- 4. The 2019 SCI 1 stock assessment estimates that the SCI 1 stock biomass is very likely above the management target of 40% unfished biomass ( $B_0$ ). Therefore, Fisheries New Zealand considers that there is an opportunity to increase utilisation of SCI 1 whilst maintaining the status of the stock above the management target.
- 5. Fisheries New Zealand proposes that the Total Allowable Catch (TAC), allowances for other sources of fishing related mortality, and the Total Allowable Commercial Catch (TACC) for SCI 1 be increased.

- 6. Fisheries New Zealand proposes two options to increase the TAC and TACC as follows:
  - **Option 1** is a 10% increase in the TAC, TACC and allowance for other sources of fishing related mortality. The TACC would increase from 120 tonnes to 132 tonnes.
  - **Option 2** is a 20% increase in the TAC, TACC and allowance for other sources of fishing related mortality. The TACC would increase from 120 tonnes to 144 tonnes.
- 7. There is currently no customary Māori allowance. We are seeking information to inform the customary Māori allowance.
- 8. There is no known recreational take of scampi and it is proposed to retain a zero allowance for this sector under both options.
- 9. The key environmental interactions which must be taken into account when considering sustainability measures for SCI 1 concern seabirds, fish and invertebrate bycatch, and benthic impacts.
- 10. It is proposed to maintain the allocation for other sources of fishing related mortality at 5% of the TACC under both options.
- 11. It is not proposed to change the deemed value rates.
- 12. Fisheries New Zealand is seeking feedback and submissions on a proposal to increase the TAC and TACC for SCI 1 in light of the recent stock assessment.

### 3 Quota Management System

 Scampi entered the Quota Management System (QMS) on 1 October 2004. For more information about the QMS go to <a href="https://www.mpi.govt.nz/law-and-policy/legal-overviews/fisheries/quota-management-system/">https://www.mpi.govt.nz/law-and-policy/legal-overviews/fisheries/quota-management-system/</a>.

### 4 Legal basis for managing fisheries in New Zealand

14. The Fisheries Act 1996 provides the legal basis for managing fisheries in New Zealand, including the Minister's responsibilities for setting and varying sustainability measures. See the separate document *Overview of legislative requirements and other considerations* at <a href="https://www.fisheries.govt.nz/dmsdocument/40502">https://www.fisheries.govt.nz/dmsdocument/40502</a> for more information.

### 5 Treaty of Waitangi obligations

#### 5.1 Input and participation of tangata whenua

- 15. Input and participation into the sustainability decision-making process is provided through Iwi Fisheries Forums, which have been established for that purpose. Each Iwi Fisheries Forum has developed an Iwi Fisheries Forum Plan that described how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Particular regard will be given to kaitiakitanga when making sustainability decisions.
- 16. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.
- 17. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through remote mechanisms. In late April 2020, information on the proposal to review the TAC/TACC for SCI 1 was provided to three North Island Iwi Fisheries Forums, and input sought. The proposal for SCI 1 was discussed at the Mai i nga Kuri a Wharei ki Tihirau Iwi Fisheries Forum on 4 May 2020, and with both the Mid North and the Hiku o Te Ika Iwi Fisheries Forums on 8 May 2020.

- 18. The Mid North Iwi Fisheries Forum raised questions related to the Customary Māori allowance, bycatch and the benthic impacts of the SCI 1 trawl fishery. Further information was provided to support ongoing discussion on these issues.
- 19. Given the disruption to services, the opportunity for input from the lwi Fisheries Forums has been impacted and any further input will be included in the final advice and recommendations provided to the Minister.

#### 5.2 Kaitiakitanga

- 20. The SCI 1 fishstock (Figure 1) includes the rohe of Mai i Nga Kuri a Wharei ki Tihirau (Bay of Plenty) and Hiku o Te Ika (far North). Scampi are a taonga species in Mai i Nga Kuri a Wharei ki Tihirau and Te Hiku o Te Ika Iwi Fisheries Forum Plans.
- 21. Fisheries New Zealand consider the proposals for SCI 1 to be generally consistent with objectives of these two Iwi Fisheries Forum Plans, in particular those to improve the management of fisheries resources to ensure sustainability for future generations, to ensure that commercial and non-commercial customary needs are met, and that fish stocks are healthy and support the social, cultural and economic prosperity of iwi and Hapu.
- 22. There are no customary fisheries management tools such as mātaitai, taiāpure or Section 186B temporary closures relevant these proposals as scampi fishing takes place offshore in depths between 300 to 500 metres in SCI 1 (Figure 4).

### 6 Relevant plans, strategies, statements and context

#### 6.1 National Deepwater Plan

- 23. All scampi stocks are managed as Tier 1 species within the National Fisheries Plan for Deepwater and Middle-depth Fisheries 2019 Part 1A (National Deepwater Plan). Tier 1 species are high volume and/or high value fisheries, and are typically targeted. As part of the National Deepwater Plan, a specific chapter for the scampi fishery is under development and a species-specific harvest strategy is being developed.
- 24. The National Deepwater Plan sets out a series of Management Objectives for deepwater fisheries, the most relevant to SCI 1 being:
  - **Management Objective 1:** Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations.
  - **Management Objective 4:** Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points.
- 25. The National Deepwater Plan is a formally approved s11A plan which the Minster must take into account when making sustainability decisions.
- 26. There are no other plans or statements particularly relevant to this review.

### 6.2 Management Strategy

27. In the absence of an agreed species-specific harvest strategy, the TAC and TACC for scampi stocks are generally set based upon the status of the stock in relation to the default reference points set out in the Harvest Strategy Standard1 (Table 1).

<sup>&</sup>lt;sup>1</sup> Accessible at: http://fs.fish.govt.nz/Page.aspx?pk=104

Table 1: Scampi default reference points, and the associated management response.

Reference point	Management response
Management target $40\% B_0^2$	Stock permitted to fluctuate around this management target. TAC/TACC changes will be employed to keep the stock around the target (with a 50% probability of being at the target)
Soft limit of 20% B <sub>0</sub>	A formal time constrained rebuilding plan will be implemented if this limit is reached
Hard limit of 10% B <sub>0</sub>	The limit below which fisheries will be considered for closure
Rebuild strategy	To be determined
Harvest control rule	Management actions focussed on adjusting fishing mortality determined following consideration of the results of stock assessments and in some cases, forward projections under a range of catch assumptions, guided by biological reference points.

28. The management of SCI 1 is supported by a fully quantitative stock assessment undertaken every three years. Each stock assessment is preceded by a dedicated photographic and trawl survey.

### 7 Current state of the stock

- 29. Scampi (*Metanephrops challengeri*) are mobile, bottom dwelling crustaceans widely distributed but patchily abundant around the coast of New Zealand. They are found on mud or sandy-mud substrates between 200 and 500 metres in depth. The maximum age of scampi in New Zealand is not known. However, analysis of tag return data and aquarium trials coupled with studies of similar species overseas, suggests that scampi may achieve a maximum age of 15-20 years.
- 30. An update of the SCI 1 stock assessment was presented to the Shellfish Working Group (SFWG) in 2019. The stock assessment model incorporated updated photographic and trawl survey indices from the 2018 trawl survey alongside updated catch history and standardised Catch Per Unit Effort (CPUE) indices. The model estimated a slowly increasing biomass since 2010 (Figure 2).
- 31. The 2018 spawning stock biomass is 'Very Likely' (>90%) to be at or above the default management target of 40%  $B_0$ .
- 32. SCI 1 biomass is estimated to be between 3,300 and 3,600 tonnes which is 72-76%  $B_0$ . This results in an estimated 0% probability that SCI 1 biomass is below the default management target of 40%  $B_0$  (Figure 2).

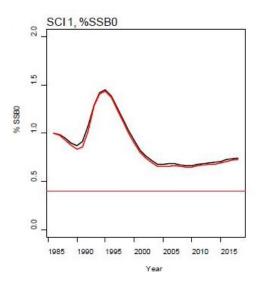


Figure 2: SCI 1 spawning stock biomass from 2019 stock assessment. The two lines represent model runs, the red horizontal line is the management target (40% *B*<sub>0</sub>).

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<sup>&</sup>lt;sup>2</sup> The term B<sub>0</sub> refers to unfished biomass

### 8 Recent catch levels and trends

- 32. Vessels used to target scampi are typically between 20 and 32 metres in length and deploy light, low headline (less than two metres) trawl gear with a double or triple rig configuration. When targeting scampi, vessels typically conduct three long (around seven hour) tows per day and remain at sea for between two and six weeks (all product is frozen on board).
- 33. The scampi fishery is a low volume target fishery, with total catch per tow averaging between one and two tonnes. Virtually all scampi in SCI 1 (>99% of catches) are taken by target bottom trawl. Negligible quantities of scampi are caught by alternate fishing methods, or as non-target bycatch in other fisheries.
- 34. The catch limit for SCI 1 was set at 120 tonnes on 1 October 1990. The TACC was set at the same amount (120 tonnes) when SCI 1 was introduced to the QMS in 2004. Landings since 1990 have been relatively stable around the TACC (Figure 3). Stable annual catches of 100 to 120 tonnes over the last 30 years are low relative to the current estimated spawning stock biomass and do not appear to have had an effect on biomass.

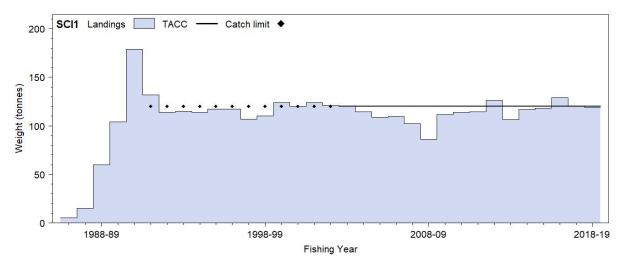


Figure 3: Landings for SCI 1 (in tonnes) since 1986/87

### 9 Current TAC, TACC and allowances

Table 2: TAC, TACC and allowances for SCI 1 (tonnes)

			Allowances			
	Total Allowable Catch	Total Allowable Commercial Catch	Customary Maori	Recreational	All other mortality to the stock caused by fishing	
SCI 1	126	120	0	0	6	

### 10 Options – varying the TAC, TACCs and allowances

35. Two options are proposed to increase the TAC, TACC and allowances for SCI 1. Feedback is sought on these options.

Table 3: Options for varying TAC, TACC and allowances for SCI 1 (tonnes)

	Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
Stock				Customary <b>Māori</b>	Recreational	All other mortality to the stock caused by fishing
	Current Setting (status quo)	126	120	0	0	6
SCI 1	Option 1	139 🥎 (10%)	132 🥎 (10%)	0	0	7 🏠
	Option 2	151 🥎 (20%)	144 🥎 (20%)	0	0	7 🏠

#### 10.1 Total Allowable Catch

36. The TAC for scampi is adjusted to take advantage when biomass increases. Option 1 proposes to increase the TAC by 10% from 126 tonnes to 139 tonnes. Option 2 proposes to increase the TAC by 20% from 126 tonnes to 151 tonnes.

#### 10.2 Allowances

- 37. The customary non-commercial take of scampi is likely to be negligible. Fisheries New Zealand is seeking information to inform the customary Māori allowance which is currently zero.
- 38. The best available information for Māori customary take is under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 (NI Customary Regulations). No permits have been issued and scampi has not been reported under the North Island Customary Regulations. There are no reported customary authorisations for SCI 1 at this time. There are no mataitai reserves or closures or restrictions under s186A of the Fisheries Act 1996 relevant to this review.
- 39. Due to the depths and locations at which scampi are found, the recreational take of scampi is either negligible or non-existent. Fisheries New Zealand proposes to retain a zero allowance for the recreational sector.
- 40. The allowance for other sources of fishing related mortality accounts for unreported scampi mortality (such as loss due to ripped nets or the incidental effects of trawl gear on scampi and their burrows). Fisheries New Zealand proposes to maintain the allocation for other sources of fishing related mortality at 5% of the TACC. This equates to an allocation of 7 tonnes for other sources of fishing related mortality under both options.

#### 10.3 Total Allowable Commercial Catch

41. Estimating the value of the SCI 1 fishery is problematic given that scampi export figures (provided by Seafood New Zealand) are not reported under a unique Harmonised System (HS) code. Using a 2019 export price of \$42/kg³ for the top grade of scampi product, it is estimated that catches from SCI 1 were worth up to \$5 million in export revenue during the 2019 calendar year. The economic considerations related to the two options proposed are outlined below, including the expected effect on revenue of the proposed options (Table 4).

<sup>&</sup>lt;sup>3</sup> Calculated using figures provided for the 'Shrimps & Prawns cold-water" and 'Norway Lobster' categories. Precise revenue is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state.

- 42. Under Option 1, the TACC would increase by 10% from 120 tonnes to 132 tonnes. Based on an estimated scampi export price in 2019 of NZ \$42/kg, this increase would result in an approximate potential increase in revenue of \$504,000 per year if the entire TACC was caught (Table 4).
- 43. Under Option 2, the TACC would increase by 20% from 120 tonnes to 144 tonnes. Based on an estimated scampi export price in 2019 of NZ \$42/kg, this increase would result in an approximate potential increase in revenue of \$1 million per year if the entire TACC was caught (Table 4).

Table 4: Predicted changes to commercial revenue for the proposed options, based on estimated average export price in 2019 of \$42/kg for SCI 1.

	TACC	Change from status quo (t)	Predicted revenue change (\$)
Option 1	132	12 1 (10%)	504,000↑
Option 2	144	24 1 (20%)	1,008,000 1

### 11 Uncertainties and risks

44. There are three primary sources of uncertainty incorporated in the 2019 SCI 1 model, the first in regards to photographic survey abundance indices, the second relates to the size distribution of scampi associated with the major burrow openings recorded in the surveys, and thirdly the relationship between stock size and recruitment for scampi is unknown.

### 12 Environmental interactions

45. The key environmental interactions with the scampi trawl fishery, which must be taken into account when considering sustainability measures, concern marine mammals, seabirds, fish and invertebrate bycatch and benthic impacts.

#### 12.1 Marine Mammals

- 46. No marine mammal captures have been reported from SCI 1 either by fishers or observers onboard vessels in SCI 1.
- 47. The incidental capture of marine mammals in scampi target trawls are likely to be very rare events and are therefore considered unlikely to impact upon the population of such species under the options proposed.

#### 12.2 Seabirds

- 48. Management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand Fisheries (NPOA-Seabirds) with a 2020 update expected to be released in the coming months. The NPOA-Seabirds establishes a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all species.
- 49. Although most scampi are retained whole, scampi fishing incurs high rates of fish and invertebrate bycatch which results in relatively high rates of fish waste being discharged. The discharge of fish waste attracts seabirds to the vessel, increasing the risk of seabird captures. However, seabird interactions with vessels in the SCI 1 fishery occur at a low rate. In the five fishing years from 2013/14 to 2017/18, observer coverage of SCI 1 on average has been 7% of total tows annually (ranging from 0 to 13.5% per year)<sup>4</sup>. During this period a mean of 0.6

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<sup>&</sup>lt;sup>4</sup> Abraham E. R., Thompson F. N. (2015). Captures of all birds in scampi trawl fisheries, in the Bay of Plenty area, during the 2017–18 fishing year. Retrieved from https://psc.dragonfly.co.nz/2019v1/released/birds/scampi-trawl/all-vessels/bay-of-plenty/2017-18/, Apr 30, 2020.

- seabirds have been observed caught annually (ranging from 0 to 2 per year). It is estimated that over this five year period, a mean of 15 seabirds were caught annually in SCI 1.
- 50. The two seabird species that are of most concern are black petrels and flesh footed shearwaters. Both seabirds' at-sea distribution overlaps with the SCI 1 QMA and both have a New Zealand Threat Classification of 'Vulnerable'. The most recent update to the seabird risk assessment<sup>5</sup> that underpins the NPOA-Seabirds identified black petrels in the 'Very High Risk' category from fishing and flesh footed shearwaters 'High Risk.'
- 51. To mitigate the risk of seabird interactions, scampi trawl vessels use a variety of measures. These include warp mitigation devices and fish waste management systems. All trawl vessels 28 metres or greater in length (including those targeting scampi) are required to deploy one type of seabird scaring device during all tows in accordance with Seabird Scaring Devices Circular 2010<sup>6</sup> to deter seabirds from approaching trawl warp(s).
- 52. Other mitigation measures deployed include the management of fish waste to ensure no fish waste is discharged during shooting or hauling with any discharge during towing occurring in batches; the use of specialist devices during times of high risk (i.e. net restrictors to limit the opening of the centre net during hauling); and minimising the amount of time the net spends at the surface during hauling.
- 53. Mitigation practices are implemented through the Scampi Operational Procedures. Operational Procedures apply to all vessels used to target scampi and set out the fleet wide mitigation measures agreed between Fisheries New Zealand, scampi quota holders and ACE holders. As part of the Operational Procedures, each vessel used to target scampi is expected to follow a Protected Species Risk Management Plan (PSRMP)<sup>8</sup> which sets out the specific actions each vessel will follow to reduce the risk to seabirds, and other protected species.
- 54. Fisheries New Zealand will continue to monitor the SCI 1 fishery and interactions with seabirds by deploying observers on vessels and working closely with industry.

#### 12.3 Fish bycatch

- 55. Scampi fishing incurs high rates of fish and invertebrate bycatch. Discards of non-QMS species are predominantly javelinfish and rattails.
- 56. The main estimated QMS bycatch species taken in the SCI 1 fishery are sea perch, hoki, ling and red cod. For all species except for sea perch, total catches of these species from the SCI 1 fishery are low compared to total catch from all fisheries.
- 57. Sea perch catch fluctuates annually with estimates based on observer data suggesting that catches may exceed the SPE 1 TACC of 53 tonnes in some years. However, observer coverage has been relatively low and unrepresentative so the bycatch estimates are highly uncertain. Therefore, analysis may overestimate sea perch catch in the SCI 1 fishery. This is because seasonal variations in sea perch catches may not be able to be detected by the analysis, given the unrepresentative and low observer coverage in SCI 1. However, Fisheries New Zealand recognises that sea perch bycatch may be an area of concern and will continue to monitor carefully and review if necessary.
- 58. Fisheries New Zealand acknowledges that the quantity of non-target bycatch is likely to increase proportionately under either of the proposed options to increase the TAC. Regular monitoring and the quantification of bycatch in scampi fisheries over time will continue to take

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<sup>&</sup>lt;sup>5</sup> Richard, Y.; Abraham, E.R. (2017). <u>Assessment of the risk of commercial fisheries to New Zealand seabirds</u>, 2006-07 to 2014-15. *New Zealand Aquatic Environment and Biodiversity Report 191*.

<sup>&</sup>lt;sup>6</sup> https://www.mpi.govt.nz/dmsdocument/20321/loggedIn

<sup>&</sup>lt;sup>7</sup> https://deepwatergroup.org/newsresources/op-manual/

<sup>&</sup>lt;sup>8</sup> Protected Species Risk Management Plans were formerly known as Vessel Management Plans (VMPs).

<sup>&</sup>lt;sup>9</sup> Although the fishery typically operates year round, between the 2011/12 and 2015/16 fishing years (the five years preceding the most recent assessment of fish bycatch in scampi fisheries), fishing events in SCI 1 were observed during only five months of the fishing year (Dec – Mar and April). Of observed fishing events, approximately 83% occurred between December and March.

place to manage any risks associated with any increase in bycatch. If non-QMS bycatch species are identified through the monitoring process as requiring additional management, the species may be considered for QMS introduction or be managed through alternative sustainability measures under section 11 of the Act.

59. No captures of protected shark<sup>10</sup> or fish species have ever been reported from the scampi trawl fishery (either by observers or unobserved vessels). Therefore, the incidental capture of protected fish or sharks in scampi target trawls are likely to be very rare events and are therefore considered unlikely to impact upon the population of such species under the options proposed.

#### 12.4 Benthic Impacts

- 60. Fishing for scampi is likely to have effects on benthic community structure and there may be consequences for benthic productivity. Fisheries New Zealand estimates the bottom trawl footprint of the entire New Zealand scampi fishery with the results summarised within the Deepwater Fisheries Annual Review Report. The trawl footprint of scampi fishing between the 2007/08 and 2016/17 fishing years was estimated to be approximately 1% of the 'fishable area' of New Zealand's Exclusive Economic Zone (EEZ).<sup>11</sup>
- 61. Bottom trawling for scampi uses relatively light bottom gear in comparison to the trawl gear used to target fish species and the footprint of the SCI 1 fishery is concentrated in a relatively narrow 300-500 metre depth band where vessels typically trawl along previously-trawled tow lines (Figure 4).
- 62. Scampi are predominantly found in areas where soft sediment/mud substrate predominates whereas fragile benthic epifauna communities are most abundant in areas of hard benthic substrate. As such, tows targeting scampi are characterised by low capture rates of sessile benthic invertebrates. Although the scampi trawl fishery in New Zealand is concentrated in areas where soft sediment/mud predominates, observers and unobserved vessels occasionally report the incidental capture of small quantities of protected corals in scampi target tows.<sup>12</sup>

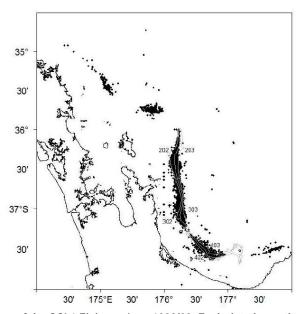


Figure 4: Spatial Distribution of the SCI 1 Fishery since 1988/89. Each dot shows the mid-point of a scampi target tow (Tuck 2020<sup>13</sup>)

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 <sup>10</sup> Throughout this document the term sharks refers to all species in the Class Chondrichthyes, which includes all cartilaginous fish such as sharks, skates, rays and chimaeras.
 11 The 'fishable area' is defined as that area shallower than 1600 m and not closed to bottom trawling by benthic protection

The 'fishable area' is defined as that area shallower than 1600 m and not closed to bottom trawling by benthic protection areas, seamount closures or marine reserves. The 2016/17 trawl footprint is available <a href="https://example.com/here.com/

<sup>&</sup>lt;sup>12</sup> Between the 2010/11 and 2018/19 fishing years, observers recorded the incidental capture of approximately 620 kg of protected coral species from scampi target tows in New Zealand. Observer coverage was approximately 9.1% during this time.

<sup>&</sup>lt;sup>13</sup> Tuck, I. D. (2020) Characterisation and Length-based Population Model for Scampi (*Metanephrops challengeri*) in the Bay of Plenty (SCI 1) and Hawke Bay – Wairarapa (SCI 2). New Zealand Fisheries Assessment Report 2020/06 295p.

- 63. Given that the SCI 1 fishery is constrained to a specific depth band and substrate, an increase in SCI 1 fishing effort will likely result in an increase in the density of fishing effort within currently or historically fished areas rather than increasing the benthic footprint into new areas.
- 64. Whilst Fisheries New Zealand acknowledges that the options to increase the TAC (as proposed) will likely result in increased fishing effort and therefore increased contact with the benthos, we consider that the additional risk to the benthic environment is low. Fisheries New Zealand will continue to monitor and review the trawl footprint of scampi annually.

## 13 Questions for submitters on options for varying TACs, TACCs and allowances

- Which option do you support for revising the TAC and allowances? Why?
- If you do not support any of the options listed, what alternative(s) should be considered?
   Why?
- Are the allowances for other sources of mortality appropriate? Why?
- 65. Please provide detailed, verifiable information and rationale to support your views

#### 14 Deemed values

66. Deemed values are an economic tool that incentivises commercial fishers not to catch in excess of their individual annual catch entitlements. No changes are proposed to the deemed value rates for SCI 1.

### 15 Referenced reports

Anderson, O.F. (2017). Fish and invertebrate bycatch in New Zealand deepwater fisheries from 1990–91 until 2013–14. New Zealand Aquatic Environment and Biodiversity Report No. 181. 75 p.

Anderson, O.F.; Edwards, C.T.T. (2018). Fish and invertebrate bycatch and discards in New Zealand arrow squid and scampi trawl fisheries from 2002–03 until 2015–16. New Zealand Aquatic Environment and Biodiversity Report No. 199. 135 p

Baird, S.J.; Mules, R. (2019). Extent of bottom contact by New Zealand commercial trawl fishing for deepwater Tier 1 and Tier 2 target species determined using CatchMapper software, fishing years 2008–17. New Zealand Aquatic Environment and Biodiversity Report No. 229. 106 p.

Fisheries Assessment Plenary May 2020: <a href="https://www.fisheries.govt.nz/news-and-resources/science-and-research/fisheries-research/">https://www.fisheries.govt.nz/news-and-resources/science-and-research/fisheries-research/</a>

Richard, Y.; Abraham, E.R. (2017). Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006-07 to 2014-15. New Zealand Aquatic Environment and Biodiversity Report 191.

Tuck, I.D. (2020) Characterisation and Length-based Population Model for Scampi (Metanephrops challenger) in the Bay of Plenty (SCI 1) and Hawke Bay – Wairarapa (SCI 2). <u>New Zealand Fisheries Assessment Report 2020/06 295p.</u>

Tuck, I.D; Hewitt, J.E.; Handley, S.J.; Lundquist, C.J. (2017). Assessing the effects of fishing on soft sediment habitat, fauna and process. <a href="New Zealand Aquatic Environment and Biodiversity Report No.178">New Zealand Aquatic Environment and Biodiversity Report No.178</a>. 143 p.

### 16 How to get more information and have your say

- 67. Fisheries New Zealand invites you to make a submission on the proposals set out in this discussion document. Consultation closes at 5pm on 1 July 2020.
- 68. Please see the Fisheries New Zealand sustainability consultation webpage (<a href="https://www.fisheries.govt.nz/news-and-resources/consultations/review-of-sustainability-measures-for-1-october-2020/">https://www.fisheries.govt.nz/news-and-resources/consultations/review-of-sustainability-measures-for-1-october-2020/</a>) for related information, a helpful submissions template, and information on how to submit your feedback. If you cannot access to the webpage or require hard copies of documents or any other information, please email <a href="mailto:FMSubmissions@mpi.govt.nz">FMSubmissions@mpi.govt.nz</a>.