



# Review of Sustainability Measures for Sea Cucumber (SCC 3 & 7B) for 2018/19

Proposals to Alter Total Allowable Catches, Allowances,  
and Total Allowable Commercial Catches

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# 1 Submission Information

1. The Ministry for Primary Industries (MPI) welcomes written submissions on any or all of the proposals contained in this Discussion Paper. All written submissions must be received by MPI no later than 5pm on **Friday 9 February 2018**.
2. Written submissions should be emailed to [FMsubmissions@mpi.govt.nz](mailto:FMsubmissions@mpi.govt.nz)

or sent directly to:  
Sustainability Review 2018  
Fisheries Management  
Ministry for Primary Industries  
P O Box 2526  
Wellington 6011.

## 1.1 OFFICIAL INFORMATION ACT 1982

3. All submissions are subject to the Official Information Act and can be released (along with 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.

## 2 Statutory Considerations

4. This section provides an overview of the Minister of Fisheries (the Minister's) legal obligations under the Fisheries Act 1996 (the **Act** or the **Fisheries Act**) when setting or varying Total Allowable Catches (TACs), and Total Allowable Commercial Catches (TACCs) for New Zealand fish stocks.
5. Where relevant, stock-specific details relating to these obligations are set out in the section of the discussion paper relating to each stock.

### 2.1 SECTION 5(a) – INTERNATIONAL OBLIGATIONS

6. Section 5(a) says the Act is to be interpreted, and all persons exercising or performing functions, duties, or powers under it are required to act, in a manner consistent with New Zealand's international obligations relating to fishing. As a general principle, where there is a choice in the interpretation of the Act or the exercise of discretion, the decision maker must choose the option that is consistent with New Zealand's international obligations relating to fishing.
7. The two key pieces of international law relating to fishing, and to which New Zealand is a party, are the United Nations Convention on the Law of the Sea, 1982 and the United Nations Convention on Biological Diversity 1992. International obligations also derive from New Zealand being a signatory to a number of international conventions. Of particular relevance are regional fisheries management organisations, Convention on International Trade in Endangered Species of Wild Fauna and Flora and the Convention on Migratory Species.

### 2.2 SECTION 5(b) – TREATY OF WAITANGI (FISHERIES CLAIMS) SETTLEMENT ACT 1992

8. Section 5(b) says the Act is to be interpreted, and all persons exercising or performing functions, duties, or powers under it are required to act, in a manner consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the **Settlement Act**). This obligation furthers the agreements expressed in the Deed of Settlement referred to in the Preamble to the Settlement Act.
9. The development of customary regulations, Iwi Fisheries Forums, and providing for the input and participation of iwi in fisheries decisions, discussed elsewhere in this paper, are some of the ways in which the obligations in the Settlement Act are given effect to.

### 2.3 SECTION 8 – PURPOSE OF THE FISHERIES ACT 1996

10. Section 8 says the purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.
11. "Ensuring sustainability" is defined as: "maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment". "Utilisation" of fisheries resources is defined as "conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing."

12. The Supreme Court has stated that the purpose statement incorporates “the two competing social policies reflected in the Act” and that “both policies are to be accommodated as far as is practicable in the administration of fisheries under the quota management system....[I]n the attribution of due weight to each policy that given to utilisation must not be such as to jeopardise sustainability”.<sup>1</sup>

## 2.4 SECTION 9 – ENVIRONMENTAL PRINCIPLES

13. Section 9 prescribes three environmental principles that the Minister must take into account when exercising powers in relation to the utilising of fisheries resources or ensuring sustainability.

**Principle 1: Associated or dependent species should be maintained above a level that ensures their long-term viability.**

14. The Act defines “associated and dependent species” as any non-harvested species taken or otherwise affected by the taking of a harvested species. “Harvested species” is defined to mean any fish, aquatic life or seaweed that may for the time being be taken with lawful authority. So this principle is focussed on species (such as protected species) for which a permission to target commercially cannot be given.
15. The term “long-term viability” (in relation to a biomass level of a stock or species) is defined in the Act as a low risk of collapse of the stock or species, and the stock or species has the potential to recover to a higher biomass level. This principle therefore requires the continuing existence of species by maintaining populations in a condition that ensures a particular level of reproductive success.
16. Where fishing is affecting the viability of associated and dependent species, appropriate measures such as method restrictions, area closures, and potentially adjustments to the TAC of the target stock should be considered.

**Principle 2: Biological diversity of the aquatic environment should be maintained.**

17. “Biological diversity” is defined in the Act as ‘the variability among living organisms, including diversity within species, between species, and of ecosystems’. Determining the level of fishing or the impacts of fishing that can occur requires an assessment of the risk that fishing might cause catastrophic decline in species abundance or cause biodiversity to be reduced to an unacceptable level.

**Principle 3: Habitat of particular significance for fisheries management should be protected.**

18. Habitat is defined in the Oxford Dictionary of English to mean the natural home or environment of an animal, plant or species. MPI considers habitat to mean those waters and substrates necessary for fish to spawn, breed, feed or grow to maturity. These should be protected and adverse effects on them avoided, remedied, or mitigated.

## 2.5 SECTION 10 – INFORMATION PRINCIPLES

19. Section 10 prescribes four information principles that the Minister must take into account when exercising powers in relation to the utilising of fisheries resources or ensuring sustainability:
  - a) Decisions should be based on the best available information;

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<sup>1</sup> Recreational Fishing Council Inc v Sanford Limited and Ors [2009] NZSC 54 at [39].

- b) Decision makers should take into account any uncertainty in the available information;
  - c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate; and
  - d) The absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.
20. Less than full information suggests caution in decision-making, not deferral of a decision completely. “The fact that a dispute exists as to the basic material upon which the decision must rest, does not mean that necessarily the most conservative approach must be adopted. The obligation is to consider the material and decide upon the weight which can be given it with such care as the situation requires.”<sup>2</sup>
21. Both scientific and anecdotal information need to be considered and weighed accordingly when making management decisions. The weighting assigned to particular information is subject to the certainty, reliability, and adequacy of that information.
22. As a general principle, information outlined in the MPI Fishery Assessment Plenary Report is considered the best available information on stock status and should be given significant weighting. The information presented in the Plenary Report is subject to a robust process of scientific peer review and is assessed against the Research and Science Information Standard for New Zealand Fisheries.<sup>3</sup> Corroborated anecdotal information also has a useful role to play in the stock assessment process and in the management process.

## 2.6 SECTION 11 – SUSTAINABILITY MEASURES

23. Section 11(1) allows sustainability measures (such as a TAC) to be set or varied after the following factors are taken into account:
- a) Any effects of fishing on the stock and the aquatic environment;
  - b) Any existing controls that apply to the stock or area concerned; and
  - c) The natural variability of the stock concerned.
24. These factors are discussed in the section of the decision paper relating to each stock.
25. Section 11 (2) says that before any sustainability measure is set or varied the Minister must have regard to any provision of–
- a) Any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991;
  - b) Any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and which the Minister considers to be relevant;
  - c) Sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000;
  - ca) Regulations made under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012; and
  - d) A planning document lodged with the Minister of Fisheries by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011–

<sup>2</sup> *Greenpeace NZ Inc v Minister of Fisheries* (HC, Wellington CP 492/93, 27/11/95, Gallen J) p 32.

<sup>3</sup> A non-binding MPI Policy Document.

that apply to the coastal marine area and are considered to be relevant.

26. Section 11 (2A) requires the Minister to take into account:
  - a) Any conservation services or fisheries services;
  - b) Any relevant fisheries plan approved under this Part-see discussion of section 11A below; and
  - c) Any decisions not to require conservation services or fisheries services.
27. Services of particular relevance to the decisions in this paper relate to programmed research used to monitor stock abundance. To date national fisheries plans have been approved only for deepwater and highly migratory species.

## 2.7 SECTION 12 – CONSULTATION AND INPUT AND PARTICIPATION OF TANGATA WHENUA

28. Section 12(1) says that before setting or varying any sustainability measure under the Act the Minister is required to:
  - Consult with those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including, but not limited to, Māori, environmental, commercial and recreational interests; and
  - Provide for the input and participation of tangata whenua having a non-commercial interest in the stock concerned or an interest in the effects of fishing on the aquatic environment in the area concerned; and have particular regard to kaitiakitanga.
29. The Act defines Kaitiakitanga to mean “the exercise of guardianship; and, in relation to any fisheries resources, includes the ethic of stewardship based on the nature of the resources, as exercised by the appropriate tangata whenua in accordance with tikanga Māori”, where tikanga Māori refers to Māori customary values and practices.
30. Iwi Fisheries Forums and Forum Fisheries Plans are the main ways in which input and participation of tangata whenua is provided for. Information provided by Forums and iwi views on the management of fisheries resources and fish stocks set out in Iwi Fisheries Plans express how tangata whenua exercise kaitiakitanga in respect of the stocks and areas in this sustainability round.
31. The proposals to consult on SSC 3 and 7B were presented to Te Waka a Māui me Ōna Toka Iwi Forum, one of the two Iwi Fisheries Forums relating to South Island iwi. The Te Waka a Māui me Ōna Toka Iwi Forum represents all nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. Their input has been incorporated into these proposals.
32. Section 12 (2) says that as soon as practicable after setting or varying any sustainability measure, the Minister shall give the persons consulted under 12(1), the reasons in writing for his or her decisions.

## 2.8 SECTION 13 - SETTING AND VARIATION OF THE TOTAL ALLOWABLE CATCH (TAC)

33. The TAC for most stocks in the Quota Management System (QMS) is set under section 13 of the Act.
34. Under section 13 the general premise is to set a TAC that maintains the biomass of a fishstock at or above a level that can produce the maximum sustainable yield (MSY). That biomass level is abbreviated as  $B_{MSY}$ .
35. MSY is defined, in relation to any fish stock, as being the greatest yield that can be achieved over time while maintaining the stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock.
36. Section 13(2) of the Act requires a TAC to be set that maintains a stock at or above MSY or that moves or restores it to or above that level, having regard to the interdependence of stocks.
37. Section 13(2A) says that if the Minister considers that the current level of a stock or the level of a stock that can produce the MSY is not able to be estimated reliably using the best available information, he or she must:
  - Not use this lack of information as a reason for postponing, or failing to set a TAC for the stock;
  - Have regard to the interdependence of stocks, the biological characteristics of the stock and any environmental conditions affecting the stock; and
  - Set a TAC using the best available information that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level which can produce the MSY.
38. The Minister may set the TAC to achieve the objective in a way and rate which has regard to the interdependence of stocks and within a period appropriate to the stock.
39. In considering the way in which and rate at which a stock is moved towards or above a level that can produce maximum sustainable yield (section 13(3)) the Minister may have regard to such social, cultural, and economic factors as he or she considers relevant. This provision applies to TACs set under section 13(2) or section 13(2A) (if applicable).
40. The obligation to have regard to the interdependence of stocks when setting a TAC requires consideration of the effects of fishing on associated stocks harvested with the target stock. Examples include other non-target fish species (bycatch) or benthic species that are incidentally impacted by bottom-impacting gear. The role of the target stock in the food chain should also be considered. In particular, interdependence involves a direct trophic (i.e. one stock is likely to be directly affected through a predator or prey relationship by the abundance of another stock) relationship between stocks.

## 2.9 SECTIONS 20 & 21 - SETTING AND VARIATION OF THE TOTAL ALLOWABLE COMMERCIAL CATCH (TACC)

41. After setting or varying the TAC, a separate decision arises in respect of allocating the TAC, i.e., deciding what portion of the TAC is to be available for commercial and other purposes.
42. Section 20 requires a TACC to be set for each QMS stock and allows it to be varied from time to time. A TACC can be set at zero. This would occur in situations where the TAC was set at zero for sustainability reasons (i.e. the fishery was closed).
43. Section 21 of the Act says that, in setting or varying the TACC, the Minister must have regard to the TAC and allow for:
  - a) Māori customary non-commercial fishing interests;
  - b) Recreational interests; and
  - c) All other mortality to that stock caused by fishing.
44. The Courts have in a number of cases considered what is involved in allowing for non-commercial interests. In *Snapper 1*<sup>4</sup>, the Court of Appeal said that the recreational allowance is simply the best estimate of what recreational fishers will catch while being subject to the controls which the Minister decides to impose upon them, e.g. bag limits and minimum lawful sizes. Having set the TAC, the Minister in effect apportions it between the relevant interests.<sup>5</sup>
45. The Supreme Court in *Kahawai*<sup>6</sup> endorsed this approach and said that the words “allow for” require the Minister both to take into account the interests and make provision for them in the calculation of the TACC.<sup>7</sup> The Supreme Court went on to say that sections 20 and 21 prescribe a framework within which the Minister must operate when setting the TACC. The framework requires apportionment of the TAC by the Minister among the various interests and other mortality. The sequential nature of the method of allocation provided for in s 21 does not indicate that non-commercial fishing interests are to be given any substantive priority over commercial interests. In particular, the allowance for recreational interests is to be made keeping commercial interests in mind.<sup>8</sup>
46. The Supreme Court further said that in the end, within the limits provided for by the Act, the Minister makes a policy decision as to what allocations are appropriate for non-commercial interests and other mortality and what is to be the TACC. These decisions are interdependent. The Act does not confer priority for any interests over the other. It leaves that to the judgment of the Minister.<sup>9</sup>
47. Under the customary fishing regulations [Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries (Kaimoana Customary Fishing) Regulations 1998], customary take is regulated through the authorisation system which requires that all customary fishing is to be undertaken in accordance with tikanga and the overall

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<sup>4</sup> *New Zealand Fishing Industry Association (Inc) v Minister of Fisheries* CA 82/97, 22 July 1997 (“*Snapper 1*”).

<sup>5</sup> *Snapper 1*, p 17.

<sup>6</sup> *New Zealand Recreational Fishing Council Inc v Sanford Limited* [2009] NZSC 54 (“*Kahawai*”).

<sup>7</sup> *Kahawai* [55]

<sup>8</sup> *Kahawai* [61]

<sup>9</sup> *Kahawai* [65]

sustainability of the fishery. This framework was put in place to give effect to legal obligations in the Settlement Act.<sup>10</sup>

48. When allowing for Māori customary non-commercial interests, the Minister must take into account:
  - a) Any m□taitai reserve in the relevant quota management area; and
  - b) Any temporary area closure or temporary fishing method restriction or prohibition imposed in the area for the purposes of improving the availability or size of a species for customary fishing purposes or recognising a customary fishing practice in the area.
49. The intent is that the purposes of measures enacted to provide for customary fishing are not adversely affected, or reasons for limited customary take are ignored, when setting the customary allowance.
50. An allowance is to be made for all other mortality to a stock that results from fishing. This includes illegal catch, discards, and incidental mortality from fishing gear.

### 3 Other Matters

#### 3.1 HARVEST STRATEGY STANDARD (HSS)

51. The Harvest Strategy Standard (HSS) is a policy statement of best practice in relation to the setting of fishery and stock targets and limits for fishstocks in New Zealand's QMS. It is intended to provide guidance on how fisheries law will be applied in practice, by establishing a consistent and transparent framework for decision-making to achieve the objective of providing for utilisation of New Zealand's QMS species while ensuring sustainability.
52. The HSS outlines the Ministry's approach to relevant sections of the Act and, as such, forms a core input to the Ministry's advice to the Minister on the management of fisheries, particularly the setting of TACs under sections 13 and 14.
53. The HSS is not however legally binding, and the Minister is not obliged to choose options based upon it.

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<sup>10</sup> Where the customary regulations don't apply, customary fishing is regulated under regulations 50-52 of the Fisheries (Amateur Fishing) Regulations 2013 and a similar authorisation system applies.

# Sea Cucumber – East coast South Island (SCC 3)

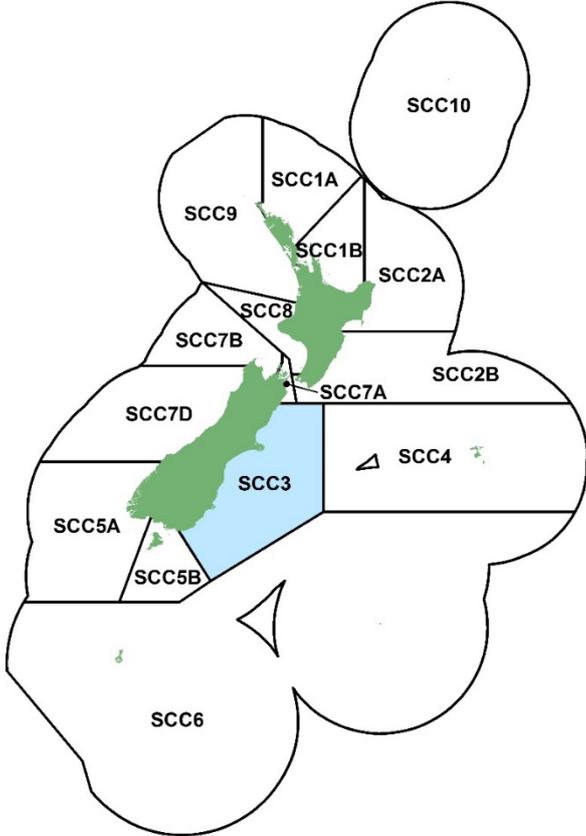


Figure 1: Quota Management Areas for sea cucumber, with SCC 3 highlighted in blue.

## 4 What is proposed?

54. The Ministry for Primary Industries (MPI) proposes to review the Total Allowable Catch (TAC), allowances and Total Allowable Commercial Catch (TACC) for sea cucumber (*Austrostichopus mollis*) in the SCC 3 quota management area (QMA) off the east coast of the South Island (Figure 1). MPI proposes the following options and seeks information and views from tangata whenua and stakeholders (Table 1).

Table 1: Proposed management settings (in tonnes) for SCC 3 from 1 April 2018.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 ( <i>Status quo</i> )	5	2	1	2	0
Option 2	54 ↑	48 ↑	1	2	3 ↑

## 5 Why the need for change?

55. When introduced into the Quota Management System (QMS) in 2004, little was known about the sea cucumber fishery. Given this lack of information, only very small TACs were set for each QMA.

56. Recent biomass information for part of SCC 3 indicates there is sufficient biomass to justify an increase to the TAC for this stock. An area surveyed off Pegasus Bay in SCC 3 estimates 3,207 tonnes green weight of sea cucumber in that area alone. A review of the TAC has been requested by quota holders looking to develop new fisheries and export markets.
57. Because of the poor information on growth rate, reproduction, recruitment, and mortality, it is not possible to determine  $B_{MSY}$ . Therefore, MPI considers that cautious increases under section 13(2A) of the Fisheries Act 1996 (the Act) are an appropriate approach to setting TACs for sea cucumber fisheries to ensure that fishing does not pose a sustainability risk.

## 6 Background Information

### 6.1 SEA CUCUMBERS

58. Sea cucumbers are marine invertebrates with a cylindrical body. They are echinoderms, like sea stars and sea urchins. Sea cucumbers are detrital feeders that can occur at depths shallower than 5,000 metres. Commercially fishable concentrations of the only species of sea cucumber of commercial value *Australostichopus mollis*, (SCC) typically occur off sheltered coastlines at depths shallower than 140 metres. They inhabit a wide range of substrates, including rocky reefs and biogenic reefs as well as gravel to mud sediments.
59. SCC are known to vary in abundance in response to environmental and other conditions. They are broadcast spawners that undergo a three to four week larval phase in the water column following fertilisation before settling. SCC can reach a size of 25 cm (300 g wet weight), and live for 5 – 15 years.
60. The New Zealand sea cucumber fishery is very small, especially when compared to overseas sea cucumber fisheries. Recent total New Zealand landings are about 25 tonnes per annum. By comparison, Japan lands 1,000 tonnes of the sea cucumber species *Apostichopus japonicas* annually; the Republic of Korea lands 6,000 tonnes of *A. japonicas* annually; and around 400 tonnes of the sea cucumber species *Parastichopus californicus* are landed per year in British Columbia.

### 6.2 SCC 3 FISHERY

61. The SCC 3 QMA extends from the Clarence River south to Slope Point (Figure 1). Fishing in SCC 3 is solely a bycatch of inshore bottom trawling, mostly from depths of 60 to 120 metres. Trawl survey and MPI Observer records show the presence of sea cucumbers in this depth range along the entire extent of SCC 3. Landings have frequently exceeded the TACC, incurring deemed value payments for fishers (Figure 2). Note that no changes to deemed value rates are proposed for SCC 3 for 2018/19.

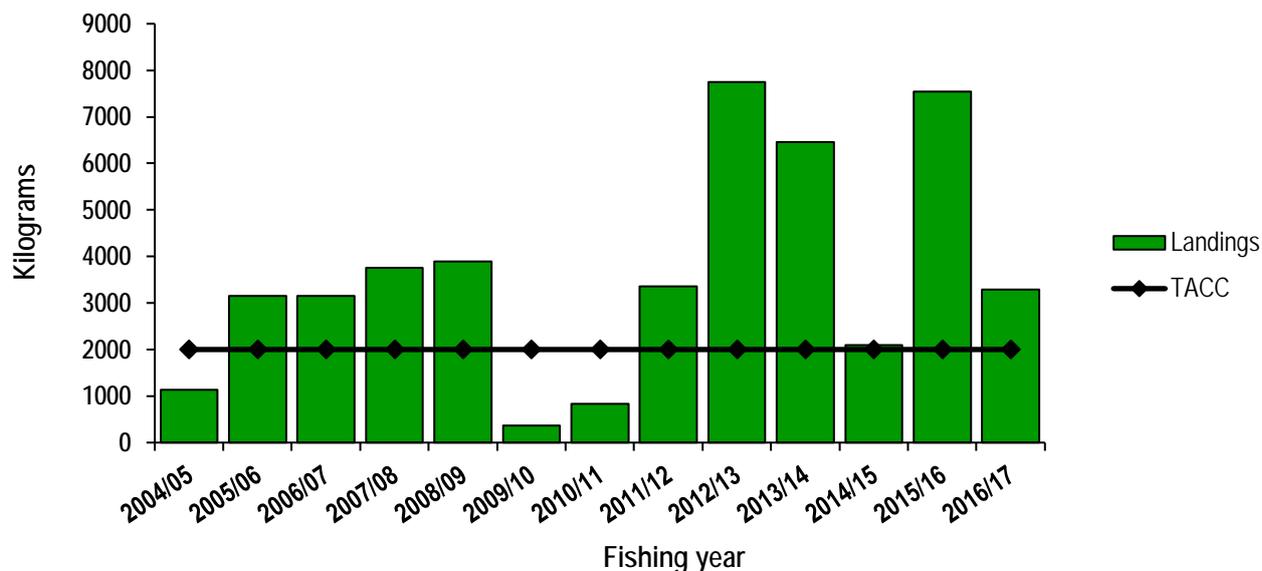


Figure 2. Landings vs TACC for SCC 3 from 2004/05 to 2016/17.

62. New scientific information suggests fishable densities of sea cucumber in SCC 3 that would support an increase to the TAC, while still ensuring the sustainability of the fishery. A survey targeting sea cucumbers on the shelf area off Pegasus Bay north of Banks Peninsula was completed in May 2017, and the results reviewed through MPI’s science working group process. The survey focused only on commercially fishable concentrations of sea cucumber within a limited area of available habitat deeper than 60 metres.

## 7 Why are these options proposed?

### 7.1 SETTING THE TAC

63. The TAC for SCC 3 can be varied under section 13 of the Act. Section 13(2) of the Act specifies requirements for setting a TAC where a reliable estimate of the current biomass of the stock and the level of biomass that can produce the maximum sustainable yield ( $B_{MSY}$ ), is known.

64. Sustainable harvest estimates require estimates of biological parameters relating to natural mortality, growth and maturity, but there is little information available on these parameters for *A. mollis*. Therefore, in cases such as SCC 3, where  $B_{MSY}$  is not able to be estimated, section 13(2A) of the Act provides for the Minister 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, the  $B_{MSY}$  level.

65. SCC 3 has been only lightly exploited to date. Internationally, sea cucumber fisheries have been prone to boom and bust cycles. MPI considers, therefore, it appropriate to take a cautious approach in setting TACs and to monitor how the fishery responds to any increased fishing. TACs can be adjusted again in the future if information indicates a utilisation opportunity (capacity to support greater harvest) or a sustainability risk (stock depletion) exists.

66. The biomass estimate for the area surveyed off Pegasus Bay is 3,207 tonnes green weight. This is a relatively high level of biomass that could support greater harvest than the current TAC without a sustainability risk. MPI proposes a similar, cautious, approach to setting the TAC to that used in other developing fisheries, such as the New Zealand surf clam fishery and the British Columbian sea cucumber fishery.
67. A cautious exploitation rate of 5% is proposed which would equate to a TAC of 54 tonnes based on the statistically significant (0.95) lower bound of the biomass estimate of 1,075 tonnes. The proposed new TAC of 54 tonnes (Option 2) is a small percentage of the estimated biomass and also applies to the whole SCC 3 QMA, not just the Pegasus Bay area surveyed.

## 7.2 SETTING ALLOWANCES AND THE TACC

68. Having set the TAC, the Minister must make allowances for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing.

### Allowance for Māori customary fishing

69. Best available information indicates that there is negligible customary harvest of sea cucumbers in SCC 3. There is no documented information on the level of Māori customary non-commercial harvest of this species, nor its importance to customary fishers. Therefore no change is proposed to the current customary Māori fishing allowance.

### Allowance for recreational fishing

70. Best available information indicates that there is little recreational harvest of sea cucumbers in SCC 3. Recreational fishing surveys indicate that sea cucumber are not caught by recreational fishers, however, it is possible that shore based recreational fishing activity for sea cucumber may not be well-represented in the recreational surveys. No change is proposed to the current recreational fishing allowance.

### Allowance for all other mortality to the stock caused by fishing

71. MPI proposes to increase the allowance for all other sources of mortality to the stock caused by fishing for SCC 3 to reflect the predominant fishing method. Sea cucumber in SCC 3 is currently a bycatch of trawling. It is proposed to increase the estimate for other sources of fishing related mortality to 3 tonnes, which is 5% of the TAC. This approach is consistent with other trawl bycatch fisheries of this type.

## TACC

72. Based on the proposed TAC, and taking into account the above allowances, a TACC of 48 tonnes green weight is proposed. Given the limited extent of the area surveyed and the limited information available, a single option is proposed (as well as Option 1, the *status quo*). Given the cautious approach to setting the TAC described above which takes into account uncertainty in the available information, this TACC has a low level of sustainability risk and is an appropriate approach under the information principles under section 10 of the Act.
73. Option 2 would provide for an increase in catch, increasing utilisation opportunity, while managing the risk to sustainability. Ongoing monitoring of the stock, including repeated surveys, will enable responsive management of the fishery.

74. There is interest from commercial fishers in developing alternative methods for fishing sea cucumber in SCC3, including specialised dredges. There is the potential for additional benthic impacts if a dredge fishery targeting sea cucumber develops in SCC 3 (rather than increased hand-gathering of sea cucumber by divers, or as a bycatch of trawling). However, the impacts to the sea bed or other sea life (section 9 of the Act) are expected to be minor given that a relatively low TAC and TACC is proposed. Should a dredge fishery develop, further research will be required to determine any environmental impacts, including the likelihood of spatial depletion over time, before any further increase to the TAC occurs.

### 7.3 EVALUATION OF OPTIONS

75. Sea cucumber is a potentially valuable fishery. If processed correctly, sea cucumbers are worth \$12.50 - \$20/kg (green weight) to fishers, and 1 kg of dried sea cucumber, if processed properly, can be worth up to \$1,000. The economic implications of the proposed options are outlined in Table 2.

Table 2: Predicted changes to commercial revenue of the proposed options, based on the price to the fisher of \$20/kg for SCC 3 in 2016/17.

	TACC	Change from status quo (t)	Predicted revenue change (\$ p.a.)
Option 1 ( <i>Status quo</i> )	5 t		
Option 2	48 t	43 ↑	Up to 960,000 ↑

76. The increases to catch limits and allowances proposed in Option 2 are considered to be sustainable, and supported by the best available information which suggests that sea cucumber abundance in SCC 3 is high enough to support modest development of the fishery. If approved, MPI will continue to monitor the state of the SCC 3 fishery and consider reviewing the TAC when this information is updated.
77. Increasing the TAC and TACC of SCC 3 will allow fishers to better utilise the sea cucumber fishery. Currently, all sea cucumber QMAs have the very small TACs that were set on their introduction into the QMS. These TACCs do not generate sufficient income to finance the research required to develop the fishery.
78. MPI considers there is little sustainability risk in the cautious increase to the TAC proposed under Option 2 for this fishery, as the biomass estimates on which it is based are cautious in relation to the entirety of SCC 3. Option 2 would allow increased utilisation with relatively low risk to the fishery, while under Option 1 (the *status quo*), none of the benefits described above would be realised.
79. MPI welcomes information and views of tangata whenua and stakeholders regarding these proposed options, including any other information to support alternate options.

## 8 Further Information

80. Should you require further information, please see:

*Fisheries Act (1996):*

<http://www.legislation.govt.nz/act/public/1996/0088/latest/DLM394192.html>

*MPI Plenary document:*

Ministry for Primary Industries (2017). Fisheries Assessment Plenary, November 2017: stock assessments and stock status. Compiled by the Fisheries Science Group, Ministry for Primary Industries, Wellington, New Zealand, 618 p.

[http://fs.fish.govt.nz/Doc/24371/80\\_SCC\\_2017.pdf.ashx](http://fs.fish.govt.nz/Doc/24371/80_SCC_2017.pdf.ashx)

## Sea Cucumber – Challenger and Nelson (SCC 7B)

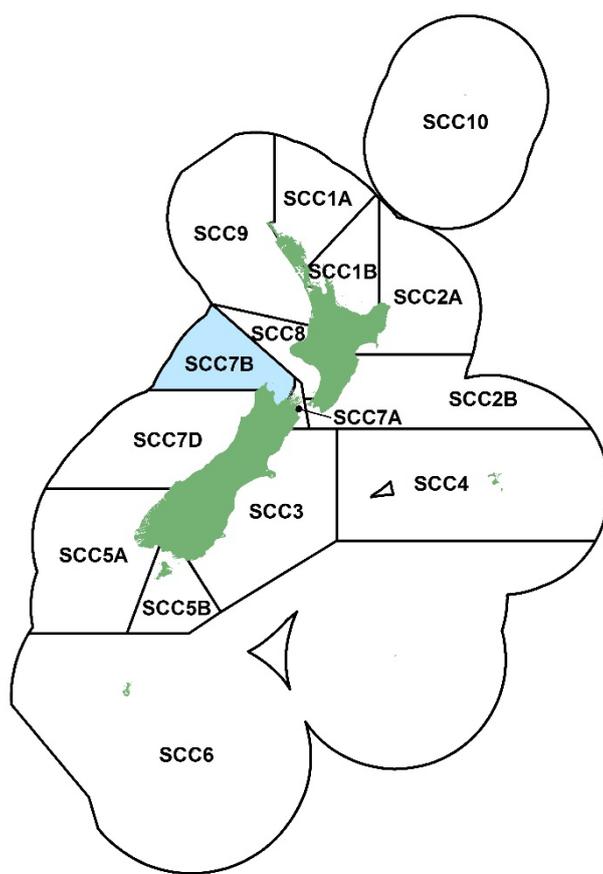


Figure 3: Quota management areas for sea cucumber, with SCC 7B highlighted in blue.

## 9 What is proposed?

81. The Ministry for Primary Industries (MPI) proposes to review the Total Allowable Catch (TAC), and Total Allowable Commercial Catch (TACC) for sea cucumber (*Austrostichopus mollis*) in the SCC 7B Quota Management Area (QMA) off the upper west coast of the South Island (Figure 3). MPI proposes the following options and seeks information and views from tangata whenua and stakeholders (Table 3):

Table 3: Proposed management settings (in tonnes) for SCC 7B from 1 April 2018.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 ( <i>Status quo</i> )	8	5	1	2	0
Option 2	17 ↑	14 ↑	1	2	0

## 10 Why the need for change?

82. When introduced into the Quota Management System (QMS) in 2004, little was known about the sea cucumber fishery. Given this lack of information, including about biological information, only very small TACs were set for each QMA.

83. Recent biomass information in part of SCC 7B indicates there is sufficient biomass to justify an increase to the current low TAC for this stock. The biomass estimate for Tasman and Golden Bay alone is 1,768 tonnes green weight. A review of the TAC has been requested by quota holders looking to develop new fisheries and export markets.
84. Because of the poor information on growth rate, reproduction, recruitment, and mortality, it is not possible to determine  $B_{MSY}$ . Therefore, MPI considers that comparatively cautious increases under section 13(2A) of the Act are an appropriate approach to develop sea cucumber fisheries. MPI considers that the increases to the TAC, allowances and TACC proposed for SCC 7B would not pose a sustainability risk.

## 11 Background Information

### 11.1 SEA CUCUMBERS

85. See section 6.1 of this paper for information about the biological characteristics of sea cucumber.

### 11.2 SCC 7B FISHERY

86. The SCC 7B QMA extends from Kahurangi Point to D’Urville Island and includes the Challenger area (Figure 3). It is a dive-fishery using underwater breathing apparatus (UBA) and is subject to specific position reporting requirements to show the location of diving events.
87. Landings were historically a bycatch of dredging for scallops in Golden Bay. However, very little scallop fishing now occurs in the area and since the 2010/11 fishing year, a hand-gathering dive fishery has been established. Landings have been around or exceeded the TACC (see Figure 4). Note that no changes to deemed value rates are proposed for SCC 7B for 2018/19.

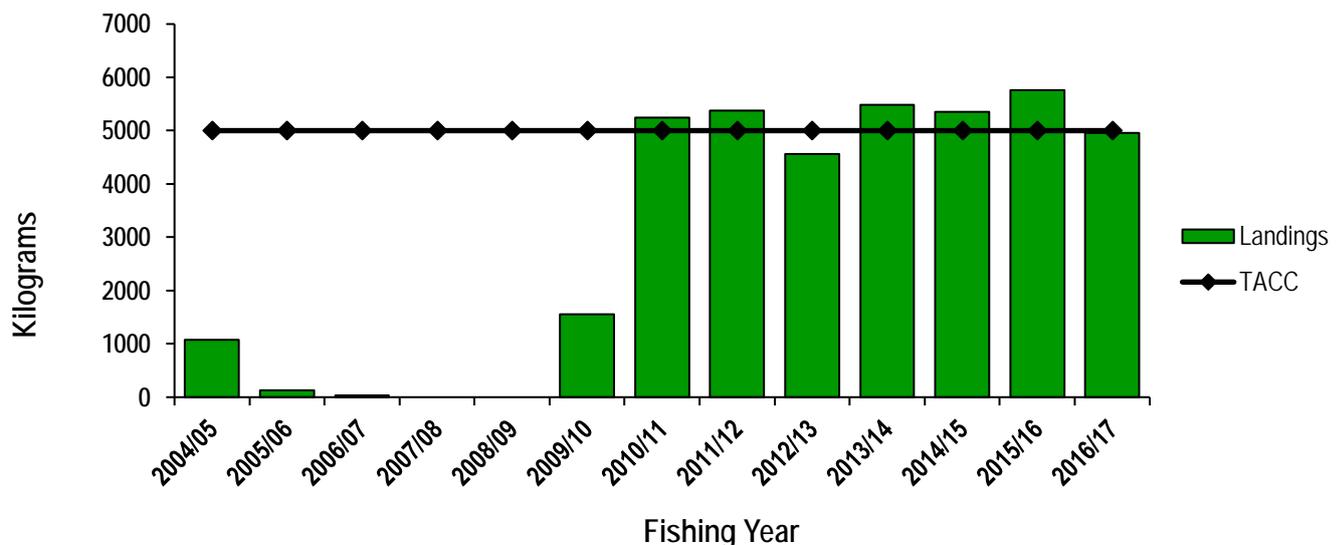


Figure 4. Landings vs TACC for SCC 7B (Tasman and Golden Bays) from 2004/05 to 2016/17.

88. A new biomass estimate for part of SCC 7B has been determined and reviewed through MPI's science working group process from bycatch data of annual scallop dredge surveys. Scallop dredge surveys within Golden and Tasman Bays and the Marlborough Sounds have been conducted annually since 1994 to provide estimates of scallop and oyster biomass. Sea cucumbers have been recorded by the surveys since 2015. Such surveys are optimised for scallops, and do not include areas such as:
- The coastal margin under ten metres depth;
  - The Croisilles Harbour;
  - Areas outside of Tasman and Golden Bays; and
  - A significant area of known biomass off the end of Farewell Spit.
89. Nevertheless they indicate sufficient biomass to support an increase in the TAC of SCC 7B.

## 12 Why are these options proposed?

### 12.1 SETTING THE TAC

90. The TAC for SCC 7B can be varied under section 13 of the Act. Section 13(2) of the Act specifies requirements for setting a TAC where a reliable estimate of the current biomass of the stock, and the level of biomass that can produce the maximum sustainable yield ( $B_{MSY}$ ), is known.
91. Sustainable harvest estimates require estimates of biological parameters relating to natural mortality, growth and maturity, but there is little information available on these parameters for *A. mollis*. Therefore, in cases such as SCC 7B, where  $B_{MSY}$  is not able to be estimated, section 13(2A) of the Act provides for the Minister 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, the  $B_{MSY}$  level.
92. SCC 7B has been only lightly exploited to date. Internationally, sea cucumber fisheries are prone to boom and bust cycles. MPI, therefore, considers it appropriate to take a cautious approach and to monitor how the fishery responds to fishing. TACs can be adjusted again in the future if information indicates a utilisation opportunity (capacity to support greater harvest) or a sustainability risk (stock depletion) exists.
93. The biomass estimate for the area surveyed is 1,768 tonnes green weight. This is a relatively high level of biomass that is likely to support greater harvest without a sustainability risk. MPI proposes a similar, cautious, approach to setting the TAC to that used in other developing fisheries, such as the New Zealand surf clam fishery and the British Columbian sea cucumber fishery.
94. A cautious exploitation rate of 5% is proposed which would equate to a TAC of 17 tonnes based on the statistically significant (0.95) lower bound of the biomass estimate (347 tonnes). The proposed TAC of 17 tonnes (Option 2) is a small percentage of the estimated biomass and applies to the whole SCC 7B QMA, not just the Tasman and Golden Bays and Marlborough Sounds areas surveyed. MPI expects that the biomass throughout SCC 7B will easily support the cautious TAC increase proposed.
95. MPI will continue to monitor the stock in the future and adjust the catch limits and allowances as necessary.

## 12.2 SETTING ALLOWANCES AND THE TACC

96. Having set the TAC, the Minister must make estimates for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing.

### Allowance for Māori customary fishing

97. Best available information indicates that there is negligible customary harvest of sea cucumbers in SCC 7B. There is no documented information on the level of Māori customary non-commercial harvest of this species, nor its importance to customary fishers. Therefore no change is proposed to the current customary Māori fishing allowance.

### Allowance for recreational fishing

98. Best available information indicates that there is little recreational harvest of sea cucumbers in SCC 7B. Recreational fishing surveys indicate that sea cucumber are not caught by recreational fishers, however, it is possible that shore based recreational fishing activity for sea cucumber may not be well-represented in the recreational surveys. No change is proposed to the current recreational fishing allowance.

### Allowance for all other mortality to the stock caused by fishing

99. No change is proposed for other mortality caused by fishing. This is a hand-gathering dive fishery, and very little mortality is expected.

## TACC

100. Given the limited extent of the area surveyed and the limited information available, a single cautious option is proposed (as well as Option 1, the *status quo*) to take into account uncertainty in the available information. This is an appropriate approach under the information principles under section 10 of the Act.
101. Option 2 would provide for an increase in catch, increasing utilisation opportunity, while managing the risk to sustainability. Ongoing monitoring of the stock, including repeated surveys, will enable responsive management of the fishery.
102. The impacts to the sea bed or other sea life (section 9 of the Act) are expected to be minor. A relatively low TAC and TACC is proposed, and the target fishery for sea cucumbers in SCC 7B is expected to remain solely a dive-only fishery. Should other methods be used (such as dredging), further research will be required to determine any environmental impacts, including the likelihood of spatial depletion over time, before any further increase to the TAC occurs.

## 12.3 EVALUATION OF OPTIONS

103. Sea cucumber is a potentially valuable fishery. If processed correctly, sea cucumbers are worth \$12.50 - \$20/kg (green weight) to fishers, and 1 kg of dried sea cucumber, if processed properly, can be worth up to \$1,000. The economic implications of the proposed options are outlined in Table 4.

Table 4: Predicted changes to commercial revenue of the proposed options, based on the price to the fisher of \$20/kg for SCC 7B in 2016/17.

	TACC	Change from status quo (t)	Predicted revenue change (\$ p.a.)
Option 1 ( <i>Status quo</i> )	2 t		
Option 2	14 t	12 t ↑	Up to 280,000 ↑

104. The increases to catch limits and allowances proposed in Option 2 are considered to be sustainable, and supported by the best available information which suggests that sea cucumber abundance in SCC 7B is high enough to support a higher TAC. MPI will continue to monitor the state of the SCC 7B fishery and may consider reviewing the TAC when this information is updated.

## 13 Further Information

105. Should you require further information, please see:

*Fisheries Act (1996):*

<http://www.legislation.govt.nz/act/public/1996/0088/latest/DLM394192.html>

*MPI Plenary document:*

Ministry for Primary Industries (2017). Fisheries Assessment Plenary, November 2014: stock assessments and stock status. Compiled by the Fisheries Science Group, Ministry for Primary Industries, Wellington, New Zealand.

[http://fs.fish.govt.nz/Doc/24371/80\\_SCC\\_2017.pdf.ashx](http://fs.fish.govt.nz/Doc/24371/80_SCC_2017.pdf.ashx)