



Fisheries New Zealand

Tini a Tangaroa

Review of Sustainability Measures for Rig (SPO 3) for 2022/23

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Contents

Page

1	Stock being reviewed	1
2	Summary	1
3	About the stock	2
4	Status of the stock	3
5	Catch information and current settings within the TAC	5
5.1	Commercial	5
5.2	Customary Māori	5
5.3	Recreational	5
5.4	Other sources of mortality caused by fishing	6
6	Treaty of Waitangi obligations	6
6.1	Input and participation of tangata whenua	6
6.2	Kaitiakitanga	7
7	Current and proposed settings within the TAC	8
7.1	Option 1 – <i>status quo</i>	8
7.2	Option 2	9
8	Environmental interactions	9
8.1	Marine mammals	10
8.2	Seabirds	10
8.3	Fish bycatch	11
8.4	Benthic impacts	11
8.5	Habitats of particular significance for fisheries management	12
8.6	Multi-species effects	12
9	Relevant plans, strategies, statements, and context	13
9.1	Draft National Inshore Finfish Fisheries Plan	13
9.2	NPOA Sharks	13
9.3	Regional Plans	14
9.4	Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy)	14
10	Deemed values	14
11	Uncertainties, risks, and other considerations	15
11.1	Maximum Sustainable Yield	15
11.2	Fisheries Amendment Bill and On-board cameras	15
12	Questions for submitters	16
13	How to get more information and have your say	17
14	Legal basis for managing fisheries in New Zealand	17
15	Referenced reports	17

1 Stock being reviewed

Rig (SPO 3) – East Coast South Island, Chatham Rise, Southland, Sub-Antarctic, Rakiura and Fiordland.

Rig – *Mustelus lenticulatus*,
pioke, makō, mango

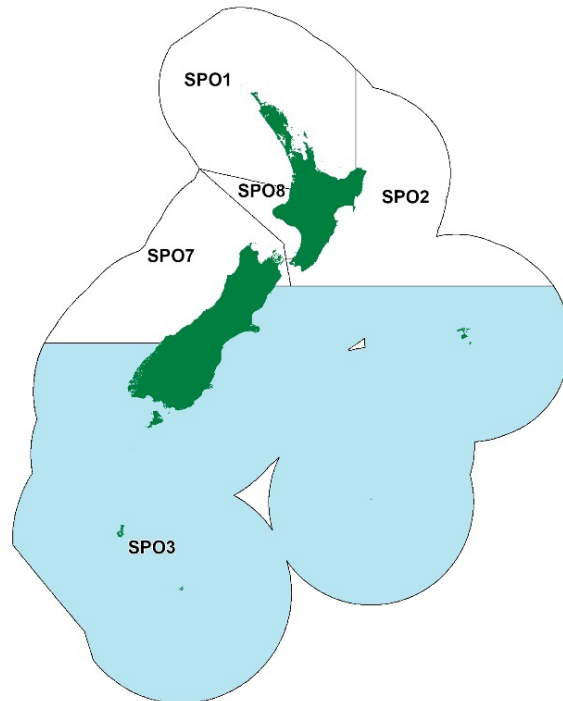


Figure 1: Quota Management Areas (QMAs) for Rig, with SPO 3 highlighted.

2 Summary

1. Fisheries New Zealand (FNZ) is reviewing sustainability measures for rig in Quota Management Area SPO 3 for the 1 October 2022 fishing year (Figure 1).
2. A May 2022 stock assessment based on both the 2021 East Coast South Island (ECSI) winter trawl survey series and updated standardised Catch per Unit of Effort (CPUE) abundance indices determined SPO 3 is at or above the Harvest Strategy Standard target of 40% SB_0 , above the soft and hard limits, and that overfishing is about as likely as not to be occurring over the entire SPO 3 area.
3. Based on this information the status quo is an appropriate option for this fishery. However, there is an upward trend in bottom trawl CPUE indices for both the ECSI and Foveaux areas while rig biomass estimates from the 2021 ECSI trawl survey also appear to be higher than previously recorded. However, these estimates are highly uncertain.
4. Taking into account the interdependencies with other stocks in this multispecies fishery SPO 3 FNZ seeks feedback from submitters to inform whether a modest increase to the TAC could be considered, or whether the status quo should be maintained. FNZ is proposing two options for consideration as outlined in Table 1 below:

Table 1: Proposed management options (in tonnes) for SPO 3 from 1 October 2022.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 (<i>Status quo</i>)	766	660	20	20	66
Option 2	802 ↑ (36 t)	693 ↑ (33 t)	20 –	20 –	69 ↑ (3 t)

- The deemed value rates for SPO 3 are lower compared to similar rig stocks such as SPO 7 and SPO 2. FNZ is proposing to increase deemed value rates to align with other stocks.
- FNZ welcomes your feedback and submissions on the options proposed, or any other alternatives.

3 About the stock

3.1 Fishery characteristics

- Rig in SPO 3 is taken as a target and bycatch in both set net and inshore mixed species trawl fisheries along the east and south coasts of the South Island. Associated non-target fisheries include set net, bottom trawl and bottom longline fisheries for school shark, flatfish, red cod, spiny dogfish, red gurnard, tarakihi, giant star gazer, barracouta, and elephant fish. Additional small amounts are landed by Danish seine vessels around Banks Peninsula.
- Rig are also a Schedule 6¹ species with fishers able to release rig back to the ocean, provided they are likely to survive. Commercial discard data suggests that approximately 10% of catch is released annually in SPO 3 using Schedule 6 exemptions.
- Rod and line fishing is the preferred recreational fishing method in SPO 3, with some longlining and, to a lesser extent, methods such as spear fishing.

3.2 Biology

- Rig females grow larger than males and reach a maximum length of 150 cm, compared to a maximum length of 125 cm for males. They have an estimated maximum age of 20 years and reach maturity at 85-100 cm length or 4-8 years, depending on the region. They have a gestation period of 10-11 months and give birth to live young in spring-summer.
- Rig are found throughout New Zealand waters and move up and down the East Coast of the South Island. They move into shallow areas to give birth before returning to waters up to 400 m deep in autumn. The Canterbury Bight and Pegasus Bay are known nursery grounds for rig. Rig diet consists mainly of benthic fauna, especially crabs and shellfish.

3.3 Management background

- SPO 3 entered the Quota Management System (QMS) on 1 October 1986 with an October fishing year. The last time the Total Allowable Catch (TAC) was reviewed was in 2020, at which time the TAC was increased from 710 to 766 tonnes. This was due to increases observed in both the CPUE and ECSI trawl survey results in 2018.
- New Zealand has international obligations under the [National Plan of Action for Sharks](#) (NPOA Sharks) to maintain elasmobranchs such as rig at or above target. The NPOA Sharks sets goals and objectives for maintaining the biodiversity and long-term viability of New Zealand shark populations. Rig is one of the main inshore shark species taken along with school shark and

¹ Schedule 6 of the Fisheries Act 1996 (Schedule 6) refers to stocks which may be returned to the sea or other waters in accordance with stated requirements. A commercial fisher may return any rough or smooth skate to the waters from which it was taken if (a) that skate is likely to survive on return; and (b) the return takes place as soon as practicable after the skate is taken. <https://legislation.govt.nz/act/public/1996/0088/latest/DLM401761.html>

elephant fish in inshore trawl and set net fisheries. It makes up approximately 30% of all sharks caught in New Zealand.

- For more information about the QMS go to <https://www.mpi.govt.nz/law-and-policy/legal-overviews/fisheries/quota-management-system/>.

4 Status of the stock

- The best available information on the status of SPO 3 can be found within the [May 2022 Fisheries Assessment Plenary report](#).
- The latest SPO 3 stock assessment was completed in 2022. For this assessment the SPO 3 QMA was split between the East Coast South Island and Foveaux Strait to better reflect stocks and fishing methods. The East Coast assessment is based on the ECSI trawl survey series and standardised bottom trawl and set net CPUE abundance indices. This assessment determined the ECSI portion of SPO 3 is about a likely as not (40-60%) to be at or above the default management target² (Figure 2). For Foveaux Strait the assessment is based only on bottom trawl and set net CPUE indices. The assessment determined, rig were unlikely (<40%) to be below either the soft or hard limits, but overfishing is likely to be occurring (Figure 3).

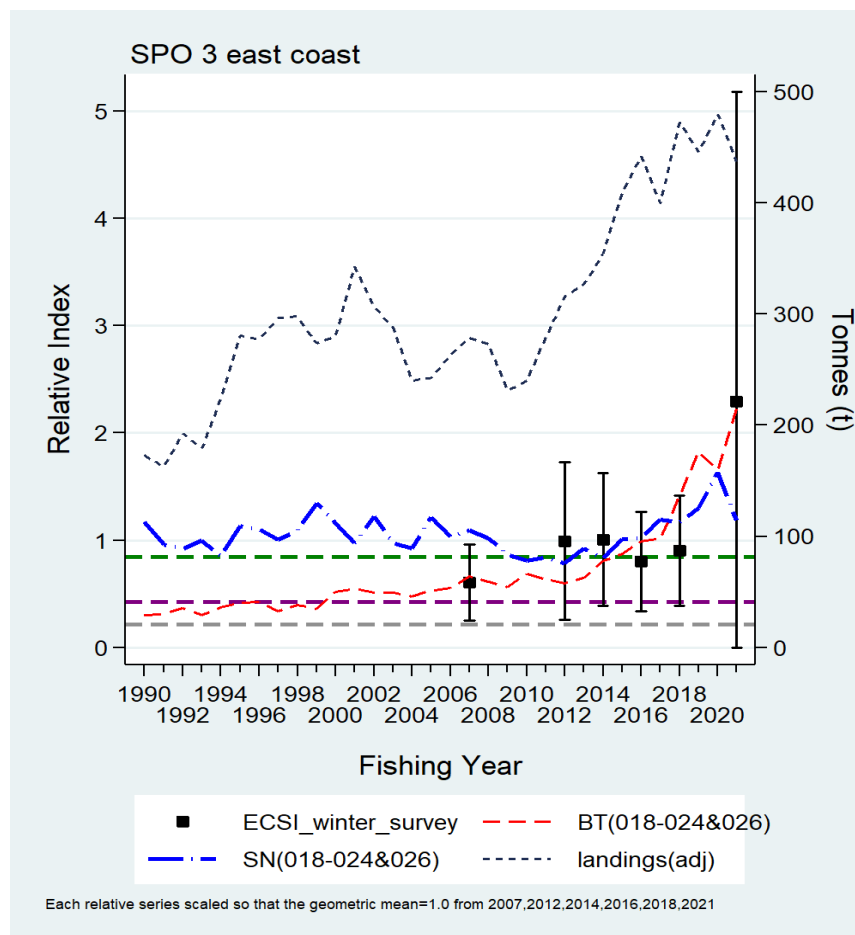


Figure 2: A comparison of the ECSI trawl survey (black square) with two accepted East Coast CPUE indices- blue dashed line- Set Net (SN) and red dashed line - Bottom Trawl (BT), adjusted to landings (black dotted line) for SPO 3. The interim management target is shown as a green dashed line, the Soft Limit is shown as a purple line and the Hard Limit is shown as a grey line.

² Under the Harvest Strategy Standard, the default management target is 40% B_0 (unfished biomass), the soft limit is 20% B_0 , and the hard Limit is 10% B_0 .

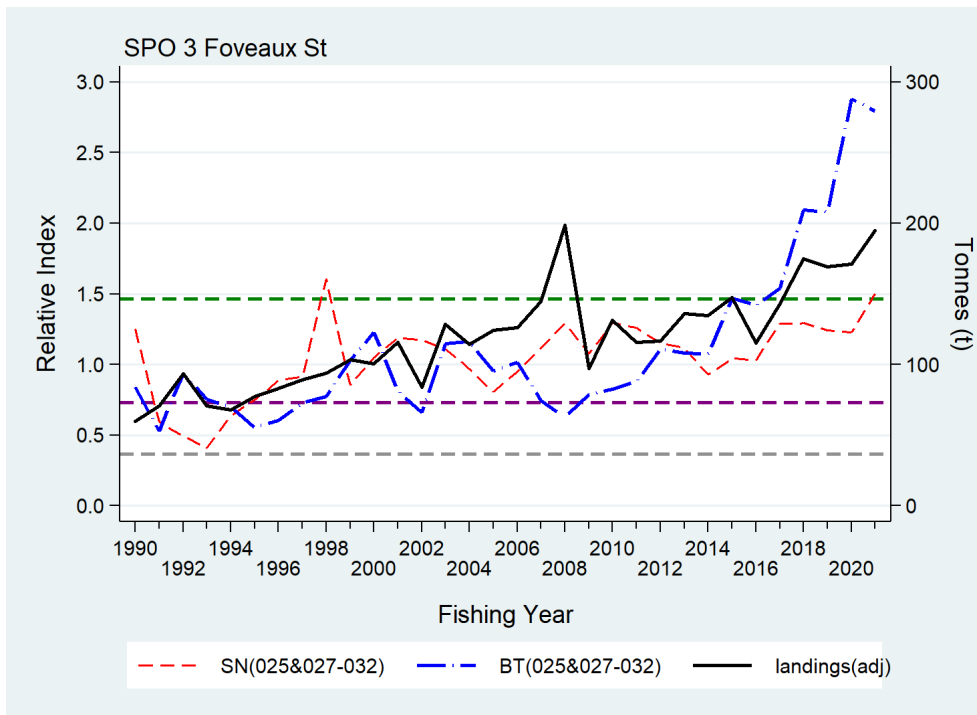


Figure 3: A comparison of two Foveaux Strait CPUE indices- blue dashed line- Bottom Trawl (BT) and red dashed line- Set Net (SN) with the adjusted QMR/MHR landings for SPO 3 Foveaux Strait. The agreed target proxy is shown as a green line, and the calculated Soft Limits shown as a purple line and the Hard Limit is shown as a grey line.

17. Rig biomass estimates from the ECSI trawl survey series were relatively consistent between 2007 to 2018, but higher compared to the 1990s. Preliminary results from the 2021 survey indicate an increase in estimated biomass, however this is associated with very high CIs. The high CI mean the recorded increase in estimated biomass is unreliable (Figure 4). The uncertainty in the results is due to the ECSI trawl survey not being optimised for rig. Rig is not a target species and does not sample core rig inshore strata (10-30m) sufficiently due to constraints on what species and depth strata can be targeted by the survey to obtain sufficient CIs.

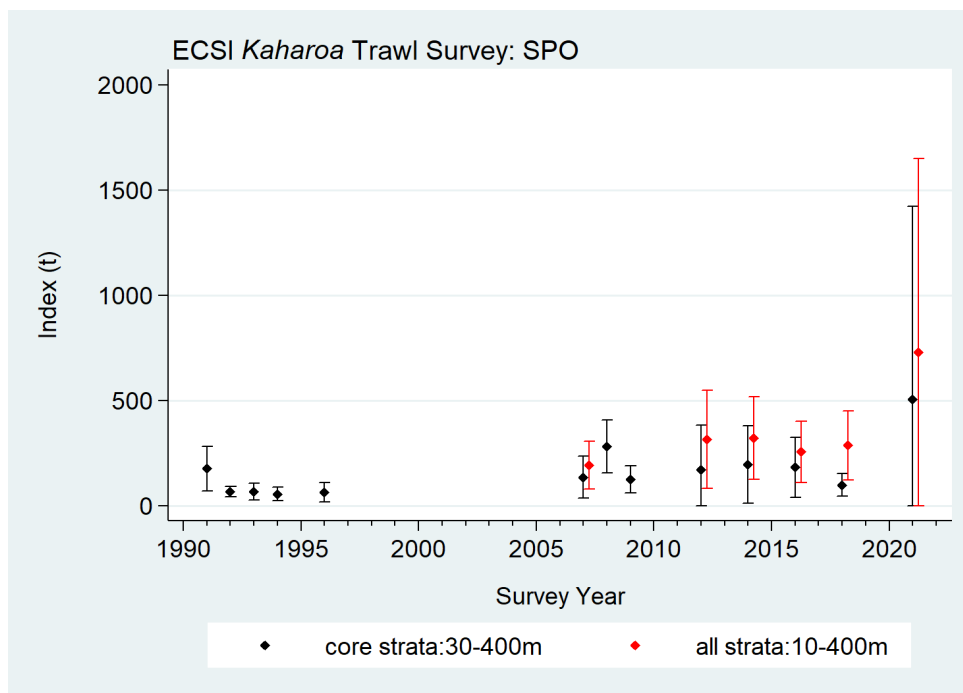


Figure 4: Rig total biomass and 95% confidence intervals for all ECSI surveys in core depth strata (30–400 m, black dots), and core plus shallow strata (10–400 m, red dots) in 2007, 2012, 2014, 2016, 2018, and 2021.

5 Catch information and current settings within the TAC

5.1 Commercial

18. Rig catch pre-QMS (up until 1986) far exceeded current levels, with most taken in the inshore set net fishery around the Canterbury Bight and Kaikoura. After the introduction of the QMS in 1986, SPO 3 catch was constrained to approximately half pre-QMS levels by the Total Allowable Commercial Catch (TACC). Rig catch was considered unsustainable at pre-QMS intensities with signs the fishery was under pressure pre-1980's with catch rates declining rapidly.
19. Since 2010, a steady increase in commercial catch has been observed with the TACC being exceeded in 2018, and consistently above or at the TACC since (Figure 5). Commercial fishing stakeholder groups (Southern Inshore Fisheries, and Fisheries Inshore New Zealand) advise that commercial fishers are finding it difficult to avoid catching rig and that its abundance has increased over the last few years especially along the East Coast of the South Island.
20. Anecdotally, it has been suggested that increases in SPO 3 catch since 2010 could be attributed to greater recruitment success due to the ban on commercial and recreational set netting within 4 nautical miles of the East and Southern Coast of the South Island implemented in 2008.

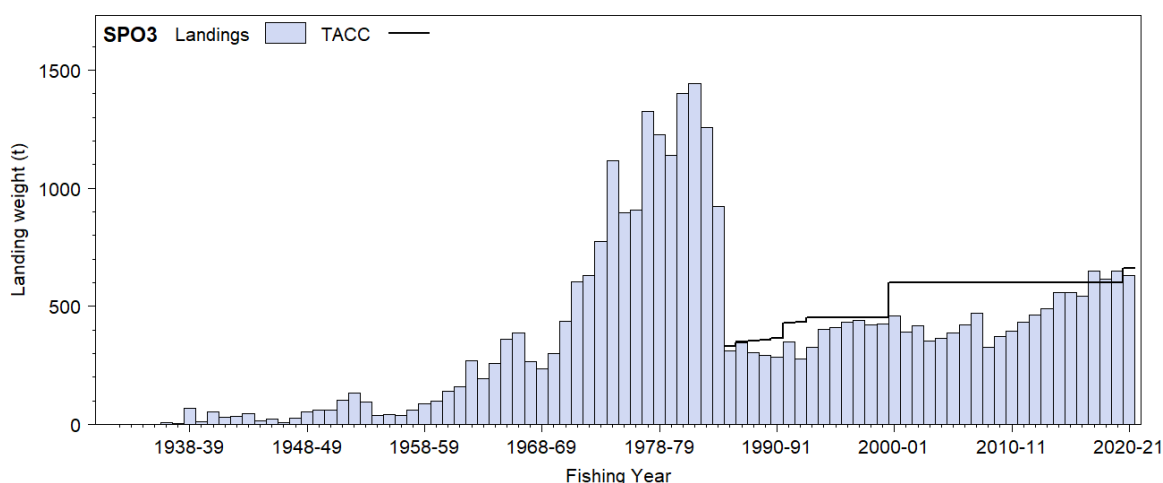


Figure 5: Historical landings (in tonnes) and TACCs for SPO 3 (South East Coast).

5.2 Customary Māori

21. Under the Fisheries (South Island Customary Fishing) Regulations 1999, rig (pioke, makō) has been reported as taken in small amounts in SPO 3. The small amount of customary reporting may reflect that tangata whenua are using recreational fishing regulations for their harvest.
22. The customary allowance for SPO 3 is currently set at 20 tonnes based on available information. FNZ welcomes input from tangata whenua on levels of customary take of rig in this area and seeks feedback on whether the current allowance sufficiently accounts for customary take of SPO 3.

5.3 Recreational

23. Rig is an important recreational species across New Zealand. The main recreational fishing method is rod and line, and the recreational daily bag limit for FMAs 3 and 5 is five per person per day as part of a mixed species daily bag limit. The last time the recreational allowance was reviewed was in 2020 when it was reduced from 60 to 20 tonnes.

24. Based on the [National Panel Survey of Marine Recreational Fishers \(NPS\) \(2017/18\)](#) catch of rig in SPO 3 increased between the 2011/12 and 2017/18 surveys. Recreational catch was estimated to be half the 20-tonne allowance in 2017/18. (Table 2).

Table 2: Summary of the National Panel Survey of Marine Recreational Fishers results from SPO 3 for rig. Figures are all in tonnes.

Fish stock	2011/12 Estimated harvest	CV	2017/18 Estimated harvest)	CV
SPO 3	8.1	± 1.3	9.4	± 1.5

25. The NPS is, however, only a snapshot of fishing activity over a single fishing year, and it is not appropriate to draw robust conclusions around increases or reductions in recreational harvest solely from this information. Factors such as weather, wind, swell, water temperature and fuel prices all determine how much fishing occurs in any given year.

5.4 Other sources of mortality caused by fishing

26. The allowance for other sources of mortality caused by fishing includes mortality associated with the requirement to return fish below the minimum legal size to sea and other mortality from fish escaping fishing gear, or illegal discarding.
27. As part of decisions relating to the 2020 October sustainability round, the then Minister of Fisheries decided to set allowances for all other sources of mortality caused by fishing at a level equivalent to 10% of the TACC for predominantly trawl caught fisheries. Rig are caught within both set net and trawl fisheries and there is uncertainty in the exact level of incidental mortality for this species. The current setting is considered an appropriate approach unless evidence suggests an alternative setting would be more suitable to the stock.
28. Therefore, an allowance equivalent to 10% of the TACC is considered appropriate for SPO 3.

6 Treaty of Waitangi obligations

29. Section 5 of the Fisheries Act 1996 (the Act) requires that the Act be interpreted and people making decisions under the Act to do so in a manner that is consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act). The Settlement Act provides that non-commercial customary fishing rights continue to be subject to the Principles of the Treaty of Waitangi and give rise to Treaty obligations on the Crown.
30. Section 10 of the Settlement Act requires the Minister to develop policies and programmes to give effect to the use and management practices of tangata whenua. Consistent with Section 10, the Ministry has worked with Iwi to develop engagement processes that enable Iwi to work together to reach a consensus where possible and to inform the Ministry on how tangata whenua wish to exercise kaitiakitanga in respect of fish stocks in which they share rights and interests and how those rights and interests may be affected by sustainability measures proposed by the Ministry.

6.1 Input and participation of tangata whenua

31. The manner in which the Ministry provides for input and participation of Māori is not discretionary but arises as a legal obligation from section 10 of the Settlement Act³ and section 12 of the Fisheries Act 1996.⁴ Section 12 (b) of the Act requires that before undertaking any sustainability process the Minister shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing

³ Section 10 of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 refers to the effect of settlement on non-commercial Māori fishing rights and interests <https://www.legislation.govt.nz/act/public/1992/0121/latest/DLM281461.html>

⁴ Section 12 of the Fisheries Act 1996 refers to consultation <https://legislation.govt.nz/act/public/1996/0088/latest/DLM395504.html>

on the stock. In considering the views of tangata whenua, the Minister is required to have particular regard for Kaitiakitanga from the perspective of tangata whenua.

32. Consistent with the agreements with iwi under section 10 of the Settlement Act, input and participation of tangata whenua into the sustainability decision-making process is provided mainly through Iwi Fisheries Forums, which have been established for that purpose.
33. Each Iwi Fisheries Forum can develop an Iwi Fisheries Forum Plan that describes 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. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries (however, FNZ will also engage directly with iwi on matters that affect their fisheries interests in their takiwa).
34. Te Waka a Māui me Ōna Toka Iwi Forum is the Te Wai Pounamu (South Island) Iwi fisheries forum — it includes all nine tangata whenua Iwi of Te Wai Pounamu: Ngāti Apa ki Ratō, Ngāti Kōata, Ngāti Kuia, Ngāti Rarua, Ngāti Tama, Ngāti Tōarangatira, Rangitāne ō Wairau, Te Ati Awa and Ngai Tahu. Their Iwi Fisheries Forum Plan is titled Te Waipounamu Iwi Forum Fisheries Plan.
35. At the March 2022 hui, FNZ discussed the October sustainability round generally. At that time, South Island stocks for review were not finalised as trawl survey biomass estimates were not available to inform options for rig for forum member's input. The options presented in this paper will, therefore, be discussed further with Te Waka a Māui me Ōna Toka Iwi Forum hui in July 2022. In response to the forum's input further options may be presented to the Minister for his consideration.
36. FNZ also welcomes any input and submissions on the options from tangata whenua outside of this planned engagement

6.2 Kaitiakitanga

37. Mango (rig) are identified as a taonga species in Te Waipounamu Iwi Forum Fisheries Plan. The Forum Fisheries Plan contains objectives to support and provide for the interests of South Island iwi, including the following which are relevant to the options proposed in this paper:
 - **Management objective 1:** To create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and whanau;
 - **Management objective 2:** South Island Iwi can exercise kaitiakitanga;
 - **Management objective 3:** To develop environmentally responsible, productive, sustainable, and culturally appropriate commercial fisheries that create long-term commercial benefits and economic development opportunities for South Island iwi; and
 - **Management objective 5:** to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
38. Customary tools utilised under the Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries Act 1996, allow tangata whenua to manage their fisheries in a way that best fits their local practices. The following customary management areas are located within SPO 3 (Table 3).

Table 3: Customary fisheries management areas within SPO 3.

Name	Management type
Te Taumanu o Te Waka a Māui Oaro-Haumuri Akaroa Harbour East Otago	Taiāpure <i>All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations for commercial, recreational, and customary fishing.</i>
Te Waha o te Marangai Mangamaunu Kahutara Oaro Tūtaeputaputa Lyttleton Harbour/Whakaraupo Rapaki Bay Koukourārata Te Kaio Ōpihi Extension Ōpihi Waitarakao Te Ahi Tarakihi Tuhawaiki Waihao Moeraki Otakou Puna-wai-Toriki (Hays Gap) Waitutu Oreti Motupohue Te Whaka a Te Wera Horomamae Pikomamaku Kaihuka	Mātaitai Reserve <i>Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.</i>

39. FNZ considers the options proposed in this paper will not directly impact on, or be impacted by, the customary fisheries management areas in SPO 3. Commercial fishing is prohibited in mātaitai and there are no regulations relating to rig in taiāpure, or bylaws in any of the mātaitai.
40. FNZ is seeking input from tangata whenua on how the proposed options for SPO 3 may or may not provide for kaitiakitanga as exercised by tangata whenua, and how tangata whenua consider the proposal may affect their rights and interests in this stock.

7 Current and proposed settings within the TAC

7.1 Option 1 – status quo

TAC: 766 t	TACC: 660 t	Customary: 20 t	Recreational: 20 t	Other mortality: 66 t
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41. Option 1 is to retain the current TAC and other settings. This option is appropriate given the latest stock assessment, which determined SPO 3 to be about as likely as not to be at or above the Harvest Strategy Standard target of 40% SB₀, suggesting current catch levels are appropriate for this stock.
42. This option also takes into account the low productivity and susceptibility of rig to overfishing. As well as New Zealand’s goals and objectives for maintaining the biodiversity and long-term viability of New Zealand shark populations under the National Plan of Action for Sharks (NPOA Sharks). With one of these goals being to maintain elasmobranchs at or above target. The

NPOA Sharks also sets goals and objectives for maintaining the biodiversity and long-term viability of New Zealand shark populations.

43. Option 1 is consistent with the Te Waipounamu Iwi Fisheries Forum Plan management objectives; particularly Objective 3, to support environmentally responsible, productive, sustainable, and culturally appropriate commercial fisheries that create long term commercial benefits and economic development opportunities for South Island iwi.

7.2 Option 2

TAC: 802 t (↑ 36 t)	TACC: 693 t (↑ 33 t)	Customary: 20 t –	Recreational: 20 t –	Other mortality: 69 t (↑ 3 t)
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44. Option 2 provides a modest adjustment to the TAC of 36 tonnes, with no increase to customary or recreational allowances. It increases other mortality caused by fishing by 3 tonnes and increases the TACC by 33 tonnes.
45. It notes the upward trend in bottom trawl CPUE indices for both the ECSI and Foveaux areas indicates and that rig biomass estimates from the 2021 ECSI trawl survey also appear to be higher than previously recorded, however, these estimates are highly uncertain and are considered unreliable.
46. This option creates a greater risk that rig could move below the target, however the proposed increase is modest and rig is regularly monitored by the biennial ECSI trawl survey (with new results due at the end of 2022). Management action can be quickly taken if a decline in abundance is observed.
47. If the abundance of rig has increased the success and levels of harvest for customary and recreational fishers will also likely increase. The current recreational allowance is double the estimates from the NPS in 2017/18 and remains sufficient. Similarly, the reported customary catch is far lower than the current allowance.
48. Based on the 2020/21 port prices, the proposed increases in TACC under Option 2 for rig will generate a further \$150,000 per year in commercial fishing revenue. It is important to note that port price is an average of what commercial fishers receive across a QMA, not what the fish is worth at market (which is higher). Nor does it reflect the income for Licensed Fish Receivers (including, wholesalers and/or processors) and retailers.
49. Under Option 2 the other sources of mortality caused by fishing allowance would be increased to maintain it at 10% of the TACC as decided by the previous Minister of Fisheries in 2020 to be appropriate for this stock.

8 Environmental interactions

50. The key environmental principles, which must be taken into account when considering sustainability measures for SPO 3 are as follows:
 - (a) Associated or dependent species should be maintained above a level that ensures their long-term viability (marine mammals, seabirds, fish, and invertebrate bycatch).
 - (b) Biological diversity of the aquatic environment should be maintained (in particular the benthic impacts from fishing); and
 - (c) Habitats of particular significance for fisheries management should be protected.
51. It is important to note that in some cases FNZ has made assumptions about environmental interactions based on fisher reported data that may not have been independently verified (for example, by an on-board FNZ Observer). Observer coverage in SPO 3 has averaged 6.8% in

the past 5 fishing years based on event level data⁵, with observer effort prioritised to monitor protected species interactions in fisheries considered to be higher risk.

52. Increased uptake of cameras onboard vessels in SPO 3 will enhance FNZ's abilities to monitor environmental interactions in these fisheries (refer to section 12.2 below for more details).

8.1 Marine mammals

53. Sometimes marine mammals are accidentally caught during commercial fishing. Commercial fishers must file daily reports about what they have caught and FNZ is now releasing these reports quarterly (from the 2019/20 fishing year). You can view this information on our [webpage](#). It is important to note, in some cases FNZ has made assumptions about the likely fishing method.
54. [The Hector's and Māui dolphin Threat Management Plan](#) guides management approaches for addressing both non-fishing and fishing related impacts on Hector's and Māui dolphins. In recognition of the threat from commercial trawling and set netting, area-based restrictions have been put in place. The total area covered by restrictions has increased over time, reflecting improved information on the nature and extent of the risks.
55. Both commercial and recreation set netting is prohibited within 4 nautical miles (nm) of the East Coast and Southern South Island since 2008. Commercial set netting is still allowed in areas outside 4nm, as well as within some estuaries and off the coast of Rakiura and Fiordland.
56. Trawl gear is restricted outside 2 nm from the coast between Cape Jackson in the Marlborough Sounds and Slope Point in the Catlin's – only trawl nets with defined low headline heights may be used. Existing restrictions along the East Coast of the South Island are presented in Table 4 below.

Table 4: Existing trawl restrictions along the east coast South Island.

East coast South Island	Method	Existing measures
Pegasus Bay	Trawl	Low headline height required on trawl vessels operating within 2 nm of shore.
Banks Peninsula to Timaru	Trawl	Low headline height required on trawl vessels operating within 2 nm of shore.

57. New Zealand sea lions, New Zealand fur seals, common dolphins and other marine mammals inhabit the marine environment where rig are caught in FMA 3, 4 and 5. These species periodically interact with trawl vessels. For inshore trawl vessels in 2019/20, three New Zealand fur seal deaths were reported by commercial fishers or observed by FNZ Observers in the SPO 3 area (see [East Coast South Island](#)). However, only around 6% of inshore trawls were observed, so the total number of interactions is uncertain. Over the same period three New Zealand Fur Seal deaths were also reported or observed by set net vessels in the SPO 3 area ([East Coast South Island](#)). However, only around 5% of set netting was observed, so the total number of interactions is uncertain.
58. Overall, FNZ considers the number of incidental marine mammal captures is unlikely to increase under the options proposed in this paper as it is not expected that the amount of trawling or set netting effort will increase significantly.

8.2 Seabirds

59. The most recent Spatially Explicit Fisheries Risk Assessment ranks black petrel as the most at risk seabird, followed by the Salvin's albatross, Westland petrel, flesh-footed shearwater, southern Buller's albatross, and Gibson's albatross (Baird & Mules, 2021).

⁵ This coverage was calculated based on fishing events in which the fish stock was recorded as caught and an observer was on board. This metric does not reflect the overall level of monitoring in the fishery.

60. Seabird interactions with New Zealand's commercial fisheries are managed under the [National Plan of Action \(NPOA\) - Seabirds 2020](#). The NPOA – Seabirds, with its focus on education and ensuring fishers take all practicable steps to minimise risk to seabirds, will drive significant changes in fisher behaviour and help to ensure that fishing does not adversely impact on the health of seabird populations.
61. FNZ and the fishing industry have worked collaboratively for over a decade, more recently for the inshore fleet, to ensure vessels have, and follow, a Protected Species Risk Management Plan (PSRMP). A PSRMP specifies the measures that must be followed on board each vessel to reduce the risk of incidental seabird captures. While there is no legal requirement that fishers have a PSRMP, more than 90% of the full-time vessels that operate in the SPO 3 trawl and set net fishery have, and follow, one.
62. FNZ is now releasing seabird interaction reports quarterly (from the 2019/20 fishing year). You can view this information on our [webpage](#). For the inshore trawl fishery in 2019/20 for the [East Coast South Island](#), 12 seabird interactions (7 deaths, 5 released alive) were reported or observed. However, as described for marine mammals, only a small proportion of trawls are observed by FNZ observers. Over the same period, 3 seabird deaths were also reported or observed by set net vessels in the SPO 3 area [East Coast South Island](#). However, only around 5% of set netting was observed.
63. Overall, FNZ considers the number of incidental seabird captures is unlikely to increase under the options proposed as it is not expected that the amount of trawling or set netting will increase significantly.

8.3 Fish bycatch

64. Fish and invertebrate bycatch information in the inshore mixed trawl fishery is primarily from trawl surveys. Trawl surveys along the ECSI have captured more than 50 finfish species including spiny dogfish, red cod, barracouta, tarakihi, hake and jack mackerel. Invertebrates captured included sponges, mussels, octopus, and arrow squid.

8.4 Benthic impacts

65. Bottom trawling can damage the marine environment; particularly where trawling occurs on biodiverse habitats. However, the proposed increase is modest and are not likely to significantly increase trawl effort as they reflect increased fish abundance and CPUE. Trawling in this fishery is also typically confined to areas that have been consistently fished over time (and are not areas of high biodiversity).
66. Concerns have been raised about catch being taken in “hay paddocks” on the South east continental shelf. These are polychaete worm beds that are biologically sensitive, habitat forming areas and maybe vulnerable to disturbance from fishing. FNZ does not expect increases to the amount or location of bottom trawling. FNZ will closely monitor any increase in targeted fishing, by activity and location, and if an increase in fishing activity does occur, we can look at appropriate measures to manage any issue that may arise.
67. Aquatic Environment and Biodiversity research has characterised both New Zealand's benthic environment and the level of benthic impact from fisheries activity (Aquatic Environment and Biodiversity Annual Review 2018). The environmental impacts of fishing are summarised annually by FNZ. FNZ will continue to monitor the bottom trawl footprint of fisheries.
68. Overall, FNZ considers the increase to catch limits proposed reflects increased CPUE and, therefore, are unlikely to increase impact on the benthic habitat.

8.5 Habitats of particular significance for fisheries management

69. Rig are broadly distributed in FMA 3, 4 and 5 and there is limited information regarding what specific areas of habitat that are of particular significance to the stocks. Some general habitats that could be regarded as significant to SPO 3 are discussed in Tables 5 below.

Table 5: Summary of information on habitats of particular significance for fisheries management for SPO 3.

Fish Stock	SPO 3
Habitat of particular significance	No specific areas are identified in SPO 3. However general areas of Canterbury Bight, Pegasus Bay, Akaroa, Lyttleton and other sheltered bays, harbours, and estuaries throughout SPO 3 where high catches occur. This suggest bays and estuaries are nursery areas which might supply recruits to the East Coast of the South Island
Attributes of habitat	<p>Breeding: Rig give birth to live young in spring annually in shallow coastal bays and harbours. Soft sediments and sand are preferred pupping areas along the East Coast of the South Island.</p> <p>Juvenile: Prefer shallow sheltered waters such as bays and harbours with abundant shellfish beds in their first summer. As the water temperatures drop in autumn they move into deeper water.</p>
Reasons for particular significance	<p>Successful birth of live young in shallow coastal waters and harbours is critical to supporting the productivity of the stock and ensuring juveniles recruit into the fishery.</p> <p>Juvenile habitats in shallow waters are likely to provide shelter and protection from predation and harvesting and provide suitable food for their first summer. As they grow, deeper water habitats are essential while growth and development proceeds.</p>
Risks/Threats	<ul style="list-style-type: none"> • Land-based impacts on habitats in harbours, estuaries and shallow embayment's that provide juvenile habitat. • Benthic impacts from bottom contact trawl fisheries damaging benthic habitats. • Changes in water temperature and water circulation could impact recruitment.
Existing protection measures	Although not specific to SPO 3, within the management area there are several habitats that are possibly of particular significance to other species that are currently protected by regulatory and non-regulatory measures (voluntary). These areas are similar habitat to that frequented by other inshore species such as shallow coastal areas and embayment's, estuaries and harbours including Akaroa, Lyttleton Harbour, Pegasus Bay, and the Canterbury Bight.

70. FNZ will be starting an online consultation in mid-2022 on draft guidelines for identification of habitats of particular significance for fisheries management and the operational proposals to support its application. We would welcome your feedback. More information will be available on <https://www.mpi.govt.nz/fishing-aquaculture/> when the consultation starts.

8.6 Multi-species effects

71. FNZ is moving towards more explicit consideration of interactions within a fishery complex and within a multi-stock management approach.
72. In 2019, FNZ took a multi species approach to reviewing those stocks (where appropriate) caught together in FMA 3. At that time, analysis of the interdependencies between the stocks identified that there appears there are three tiers of interdependences (where target catch influences bycatch):
- one with blue moki and gurnard,
 - the second with leatherjacket and gurnard,
 - and the third with gurnard and rig.
73. Increases to catch limits for SPO 3 will increase the ability of fishers to target this species and may reduce bycatch of other less abundant species with overlapping depth profiles. This is of

particular importance for East Coast tarakihi as it is currently undergoing a rebuild due to low abundance. Tarakihi in the ECSI mixed trawl fishery is mainly caught in waters deeper than 100m, while rig catch in the trawl fishery are in shallower strata.

74. FNZ is also reviewing red gurnard (GUR 3) and if the TACC for both GUR 3 and SPO 3 are increased, this will allow fishers to move into shallower waters, away from traditional tarakihi habitat and undertake more targeted fishing, reducing the bycatch of East Coast tarakihi and improving the rate of rebuild.

9 Relevant plans, strategies, statements, and context

75. The following plans and strategies are relevant for SPO 3.

9.1 Draft National Inshore Finfish Fisheries Plan

76. Although not yet approved under section 11 A of the Fisheries Act 1996, rig will be managed under the draft [National Inshore Finfish Fisheries Plan](#) (the Plan). The Plan outlines the management objectives and strategies for finfish fisheries including SPO 3 for the next five years and was consulted on in early 2020.
77. The Plan is aimed at progressing New Zealand towards ecosystem-based fisheries management. Stocks are grouped within the Plan, with management approaches and objectives tailored accordingly for each group.
78. SPO 3 falls into Group 2, which recognises the need to manage it to provide for moderate levels of use with moderate levels of information to monitor its stock status (i.e., a partial quantitative assessment compared against trends over time).

9.2 NPOA Sharks

79. The review and updates to science information for rig supports several objectives of the [NPOA Sharks](#).
80. As an elasmobranch (cartilaginous fish, including sharks, skates, and rays), rig is included in the plan, which considers the biological characteristics of rig in terms of its vulnerability to fishing pressure and the connectivity of rig stocks.
81. One of the goals of the NPOA Sharks is to maintain the biodiversity and long-term viability of New Zealand shark populations based on a risk assessment framework. The risk assessment framework evaluates stock status, measures to ensure any mortality is at appropriate levels, and protection of critical habitat. Objectives of this goal that are met by the current review of rig are:
- For shark species managed under the quota management system (QMS), undertake an assessment to determine the stock size in relation to the biomass (total weight of fish) that can support harvest of the maximum sustainable yield (B_{MSY}) or other accepted management targets and on that basis, review catch limits to maintain the stock at or above these targets;
 - Mortality of all sharks from fishing is at or below a level that allows for the maintenance at, or recovery to, a favourable stock and/or conservation status giving priority to protected species and high-risk species; and
 - Ensure adequate monitoring and data collection for all sectors (including commercial, recreational, customary fishers, and non-extractive users) and that all users actively contribute to the management and conservation of shark populations.

9.3 Regional Plans

82. Under the Resource management Act 1991, there are several regional plans in place within SPO 3 to address the cumulative effects of activities in the coastal marine area, and the adverse impacts from land-based activities on the marine environment. These regional plans can be found electronically on each council's website. Councils in the SPO 3 areas include- Environment Canterbury, Otago Regional Council and Environment Southland.
83. Fishers are subject to the rules in the plans (for example, small scale restrictions on fishing methods in Fiordland). FNZ considers that the small scale of the restrictions in relation to the large area SPO 3 means these rules do not, in general, stop fishers taking their catch from other areas within SPO 3.

9.4 Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy)

84. [Te Mana o te Taiao – the Aotearoa New Zealand Biodiversity Strategy](#) sets a strategic direction for the protection, restoration and sustainable use of biodiversity, particularly indigenous biodiversity, in Aotearoa New Zealand. The Strategy sets several objectives across three timeframes. The most relevant to setting sustainability measures for SPO 3 are objectives 10 and 12:

Objective 10: Ecosystems and species are protected, restored, resilient and connected from mountain tops to ocean depths.

Objective 12: Natural resources are managed sustainably.

85. The Ministry for Primary Industries (MPI) is undertaking work to support this strategy, as well as the requirement under the Fisheries Act to avoid, remedy or mitigate adverse effects on the aquatic environment. The Environmental Interactions section in this paper provides information on relevant interactions with the wider aquatic environment for this stock.

10 Deemed values

86. Deemed values are the price paid by fishers for each kilogram of unprocessed fish landed in excess of a fisher's Annual Catch Entitlement (ACE) holdings. The purpose of the deemed values regime is to provide incentives for individual fishers to acquire or maintain sufficient ACE to cover catch taken over the course of the year, while allowing flexibility in the timing of balancing, promoting efficiency, and encouraging accurate catch reporting.
87. The [Deemed Value Guidelines](#) set out the operational policy FNZ uses to inform the development of advice to the Minister on the setting of deemed values.
88. The deemed value rates for SPO 3 are shown in Table 6.

Table 6: Standard deemed value rates (\$/kg) for SPO 3.

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
SPO 3- status quo	1.53	1.70	2.04	2.38	2.72	3.06	3.40

89. The average price paid by fishers during the 2020/21 fishing year for one kilogram of SPO 3 ACE was \$1.11. The 2020/21 port price of SPO 3 was \$5.56 (Figure 6).

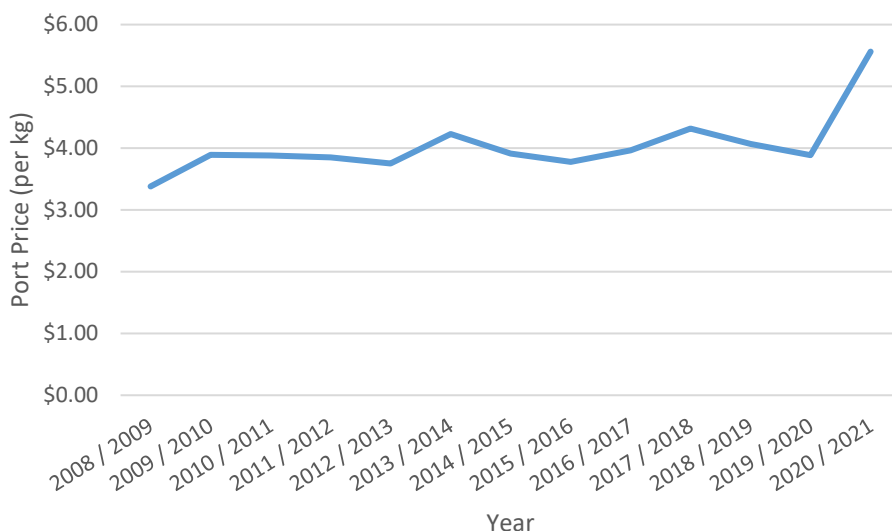


Figure 6: Average port price for SPO 3 2008-present.

90. Current deemed value rates for SPO 3 are set slightly above the average ACE price, however they are lower compared to similar rig stocks deemed values such as SPO 7 and SPO 2. FNZ proposes to adjust deemed value rates to align with other stocks (Table 7). Current deemed values also are far less than current port prices (\$1.70 deemed vs. \$5.56 port) and may not sufficiently incentivise fishers to stay within their ACE holding.
91. FNZ notes that changes in fishing behaviour and the ACE market may result in the need for the deemed value to be re-evaluated in the future. FNZ welcomes feedback on the proposal to increase deemed values.

Table 7: Proposed deemed value rates (\$/kg) for SPO 3.

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
SPO 3-proposed	2.70	3.00	3.00	3.60	4.20	4.80	6.00

11 Uncertainties, risks, and other considerations

11.1 Maximum Sustainable Yield

92. When setting a TAC, the requirement is to set it a level that maintains the stock at, or above a level that can produce the Maximum Sustainable Yield (MSY). Due to uncertainty in scientific information, there is uncertainty regarding the sustainability of continued increases in TACC at this time.
93. Under all options, FNZ will continue to monitor catch for any signals of future sustainability risks and look for opportunities to gather better information on these stocks.

11.2 Fisheries Amendment Bill and On-board cameras

94. The Fisheries Amendment Bill⁶, currently before Select Committee, is part of the wider fisheries reform programme. Its goal is to encourage better fishing practices. It aims to update and strengthen New Zealand's fisheries management system. The Bill proposes to change the current rules and policies by:

- (a) tightening commercial fishing rules for landings and discards;

⁶ [Fisheries Amendment Bill](#). Ministry for Primary Industries

- (b) creating new rules and regulations for offences and penalties;
- (c) introducing new mechanisms for commercial and recreational management decision-making;
- (d) enabling the further use of on-board cameras on vessels; and
- (e) creating a new defence to help save marine mammals and protected sharks and rays.

11.2.1 Schedule 6 exemptions

95. The best available information on releases SPO 3 under the Schedule 6 exemption suggests that about 10% of total catch is released annually.
96. Schedule 6 exemptions are proposed to be reviewed for relevant species (including rig) as part of the Fisheries Amendment Bill. It is uncertain when the Schedule 6 exemption for SPO 3 will be reviewed, but any changes to its Schedule 6 status could have implications for levels of commercial landings.

11.2.2 On board cameras

97. The Minister recently announced key details of the nationwide rollout of cameras on commercial fishing vessels.⁷ It is expected that the independent information they will provide will support the reputation of New Zealand's fishing industry, the sustainability of New Zealand's fisheries and provide for more confident management decisions.
98. This will include vessels that use the following methods:
- Set net vessels (8 metres or larger), surface longline, and bottom longline vessels.
 - Trawlers of 32 metres or less, except those targeting scampi, and danish and purse seine vessels.
99. Of most relevance to SPO 3, it is expected that cameras⁸ will be installed and transmitting footage on all setnet and inshore trawl fishing vessels operating in SPO 3 by June 2023.
100. It is expected that the On-board camera rollout, and the wider Fisheries Amendment Bill, will enhance our understanding of this stock, provide for better verified information to underpin fisheries management decisions, and encourage better fishing practices.

12 Questions for submitters

- 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 customary Māori, recreational and other sources of mortality appropriate? Why?
 - Do you think these options adequately provide for social, economic, and cultural wellbeing?
 - Do you have any concerns about potential impacts of the proposed options on the aquatic environment?
101. We welcome your views on these proposals. Please provide detailed information and sources to support your views where possible.

⁷ [Rollout of cameras on fishing vessels to begin](#). Honourable David Parker, Minister for Oceans and Fisheries.

⁸ [On-board cameras for commercial fishing vessels](#). Ministry for Primary Industries

13 How to get more information and have your say

102. FNZ invites you to make a submission on the proposals set out in this discussion document. Consultation closes at 5pm on 22 July 2022.
103. Please see FNZ's sustainability consultation webpage (<https://www.mpi.govt.nz/consultations/review-of-sustainability-measures-2022-october-round/>) 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 FMSubmissions@mpi.govt.nz.

14 Legal basis for managing fisheries in New Zealand

104. 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 <https://www.mpi.govt.nz/dmsdocument/51712> for more information.

15 Referenced reports

- Baird, S J., Mules, R (2021). Extent of bottom contact by commercial trawling and dredging in New Zealand waters, 1989–90 to 2018–19. New Zealand Aquatic Environment and Biodiversity Report No. 260. 161
- Department of Conservation and Ministry of Fisheries (2011). Coastal marine habitats and marine protected areas in the New Zealand Territorial Sea: a broad scale gap analysis. Accessible at: [Coastal marine habitats and marine protected areas in the New Zealand Territorial Sea : a broad scale gap analysis \(doc.govt.nz\)](https://www.doc.govt.nz/assets/Uploads/Coastal-marine-habitats-and-marine-protected-areas-in-the-New-Zealand-Territorial-Sea-a-broad-scale-gap-analysis-doc.govt.nz.pdf)
- Department of Conservation and Fisheries New Zealand (2020). National Plan of Action — Seabirds 2020. Accessible at: <https://www.mpi.govt.nz/dmsdocument/40652-National-Plan-Of-Action-Seabirds-2020-Report>
- Department of Conservation and Fisheries New Zealand (2019). Hector's and Māui Dolphin Threat Management Plan. Latest review accessible at: <https://www.mpi.govt.nz/consultations/hectors-and-maui-dolphins-threat-management-plan-review/>
- Fisheries New Zealand (2019). Draft National Inshore Finfish Fisheries Plan. Accessible at: <https://www.mpi.govt.nz/consultations/draft-national-inshore-fish-fisheries-plan/>
- Fisheries New Zealand (2020). Guidelines for the review of deemed value rates for stocks managed under the Quota Management System. Accessible at: <https://www.mpi.govt.nz/dmsdocument/40250/direct>
- Fisheries New Zealand (2011). Operational Guidelines for New Zealand's Harvest Strategy Standard. Accessible at: <https://www.mpi.govt.nz/dmsdocument/19706-OPERATIONAL-GUIDELINES-FOR-NEW-ZEALANDS-HARVEST-STRATEGY-STANDARD>
- New Zealand Government (2020). Te Mana o te Taiao - Aotearoa New Zealand Biodiversity Strategy 2020. Accessible at: <https://www.doc.govt.nz/nature/biodiversity/aotearoa-new-zealand-biodiversity-strategy/>
- Wynne-Jones, J.; Gray, A.; Heinemann, A.; Hill, L.; Walton, L. (2019). National Panel Survey of Marine Recreational Fishers 2017-2018. New Zealand Fisheries Assessment Report 2019/24. 104p. Accessible at: <https://www.mpi.govt.nz/dmsdocument/36792-far-201924-national-panel-survey-of-marine-recreational-fishers-201718>