Fisheries New Zealand
Tini a Tangaroa

Review of sustainability measures for snapper (SNA 2), rig (SPO 2), and John dory (JDO 2) for 2024/25

Fisheries New Zealand Discussion Paper No: 2024/17

ISBN: 978-1-991285-76-8 (online)

ISSN: 2624-0165 (online)

June 2024

Te Kāwanatanga o Aotearoa
New Zealand Government

Snapper (SNA 2), Rig (SPO 2) – East Cape, Gisborne, Wairarapa, and south coast of Wellington
John dory (JDO 2) – East Cape, Gisborne, Wairarapa, Wellington, and Taranaki

Snapper – *Pagrus auratus*, Tāmure, Kouarea

Rig – *Mustelus lenticulatus*, Pioke, Makō, Mango

John dory – *Zeus faber*, Kuparu

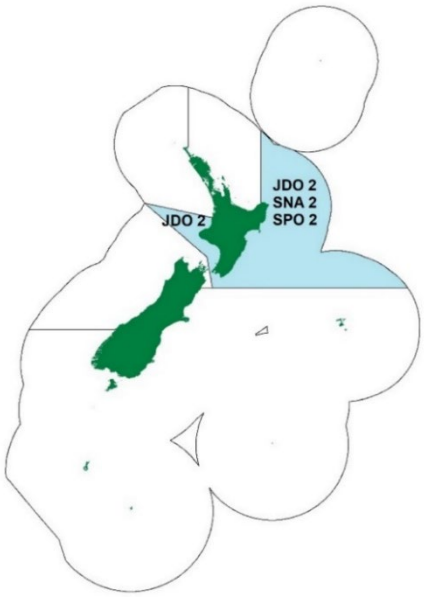

Figure 1: Quota Management Areas (QMAs) for snapper, rig, and John dory with SNA 2, SPO 2, and JDO 2 highlighted.

Why are we proposing a review?

1. Fisheries New Zealand (**FNZ**) is reviewing sustainability measures for snapper in SNA 2, rig in SPO 2, and John dory in JDO 2 for the 1 October 2024 fishing year (Figure 1).
2. The best available information from recent catch per unit effort (**CPUE**) analyses and fishery characterisations indicates that the abundance of snapper and rig in the SNA 2 and SPO 2 stocks is high and increasing (Fisheries Assessment Plenary, May 2024). Partial quantitative stock assessments indicate that SPO 2 and the southern part of SNA 2 (**SNA 2S** - includes snapper from Hawke Bay down to Wellington) are both very likely to be at or above their respective management targets (>90% probability) and their CPUE has shown a substantial increase in recent years (Figure 2(b & c)).
3. Reference points have not been established for the northern part of SNA 2 (**SNA 2N** - includes snapper from Cape Runaway down to the southern tip of Mahia) due to unresolved boundaries with the Bay of Plenty stock. However, CPUE is also high and increasing in SNA 2N and indicates that abundance has increased about 4 times from the low period between 2010 and 2016 to 2023 (Figure 2(a)).
4. Increased abundance of snapper is also reflected in the recent National Panel Survey of Marine Recreational Fishers (**NPS**), which estimates recreational catch to be exceeding the current allowance.
5. Based on this information, FNZ is proposing options to increase the Total Allowable Catches (**TACs**), allowances and Total Allowable Commercial Catches (**TACCs**) for SNA 2 and SPO 2.
6. There is some uncertainty regarding the impact of Cyclone Gabrielle on these stocks in 2023. However, the limited post-cyclone CPUE data available suggests that abundance of the exploited portions of these stocks remains high and can support greater utilisation. FNZ acknowledges that some caution is warranted given the limited availability of post-cyclone data and because the extent of the cyclone's impact will not be fully apparent for another 4-5 years (see further discussion on this below under '*Environmental conditions affecting the stocks - Cyclone Gabrielle*' on Page 14). In light of this, FNZ is only proposing options for moderate (20-30%) TAC increases at this time.
7. John dory in JDO 2 was last assessed in 2023 and determined as unlikely (<40% probability) to be at or above target (Figure 2(d), Fisheries Assessment Plenary, May 2024). JDO 2 is caught as bycatch in the trawl fisheries which also catch SNA 2 and SPO 2 and there is a risk that increasing the TACs of those stocks could result in increased catch of JDO 2.
8. Because the 2023 assessment showed that CPUE is increasing for JDO 2, FNZ considers it unlikely that the current catch levels pose a sustainability risk. However, there could be some sustainability risk if the TACC of JDO 2, at approximately 200 tonnes above current catch levels, were fully utilised. In line with this, FNZ is proposing options to set the TAC and allowances for JDO 2 and decrease the TACC.
9. The TACs of SNA 2 and JDO 2 would be set under section 13(2A) of the Fisheries Act 1996 (**the Act**), and the TAC of SPO 2 would be set under section 13(2)(a) of the Act. Any changes would apply from 1 October 2024 (the beginning of the next fishing year).

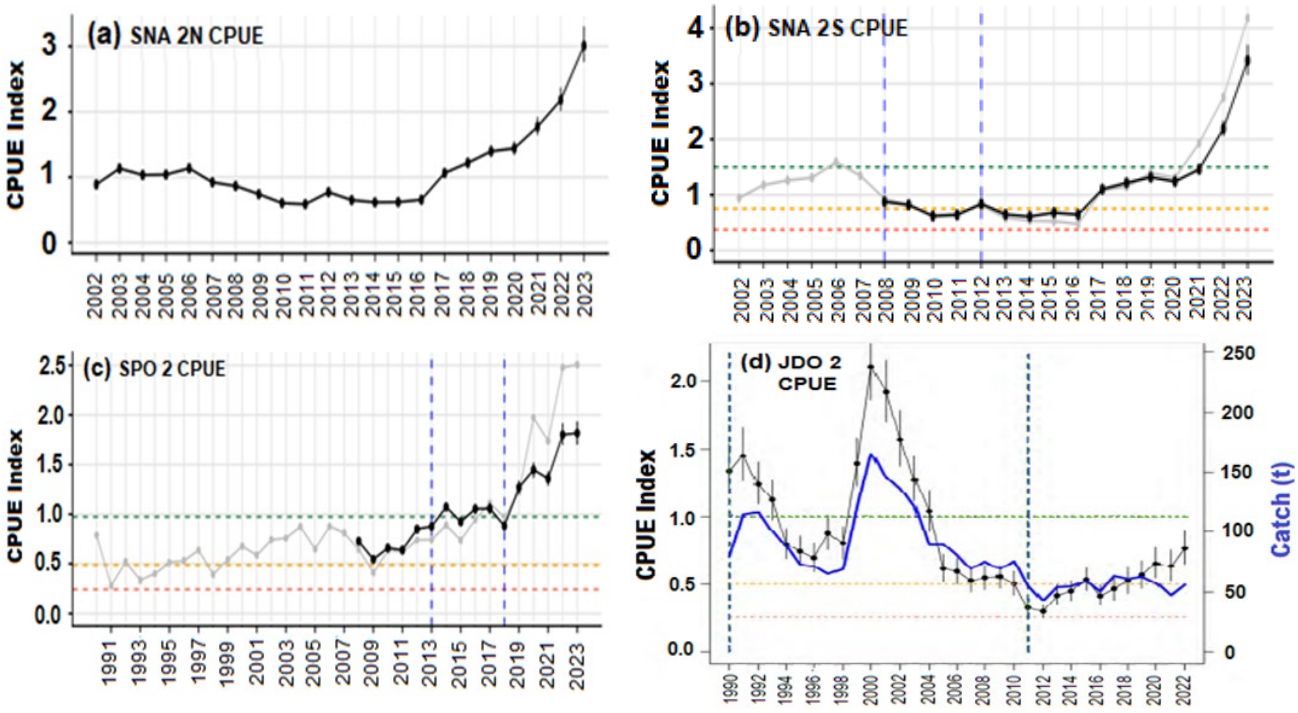

Figure 2: Commercial catch per unit effort (CPUE) indices (standardised) for **(a)** SNA 2 North **(b)** SNA 2 South **(c)** SPO 2, and **(d)** JDO 2. Horizontal green dotted lines, yellow dotted lines, and red dotted lines represent management targets, soft limits, and hard limits, respectively. Vertical blue dotted lines show reference periods (which the targets are based on). For the full figures including complete descriptions and additional relevant information, see the relevant chapters for these stocks in the Fisheries Assessment Plenary, May 2024.

Proposed options

Table 1: Proposed management options (in tonnes) for SNA 2, SPO 2, and JDO 2 from 1 October 2024.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
SNA 2	Option 1 (*Status quo*)	450	315	14	90	31
	Option 2	540 (↑ 90)	367 (↑ 52)	14	122 (↑ 32)	37 (↑ 6)
	Option 3	585 (↑ 135)	409 (↑ 94)	14	122 (↑ 32)	40 (↑ 9)
SPO 2	Option 1 (*Status quo*)	146	119	5	10	12
	Option 2	175 (↑ 29)	145 (↑ 26)	5	10	15 (↑ 3)
	Option 3	190 (↑ 44)	159 (↑ 40)	5	10	16 (↑ 4)
JDO 2	*Current settings*	*N/A*	*269.5*	*N/A*	*N/A*	*N/A*
	Option 1	299.5	269.5	1	2	27
	Option 2	211	189 (↓ 80.5)	1	2	19
	Option 3	152	135 (↓ 134.5)	1	2	14

10. FNZ is satisfied that the current deemed value rates of SNA 2, SPO 2, and JDO 2 provide sufficient incentives for fishers to balance their catch with Annual Catch Entitlement (**ACE**) (consistent with section 75(2)(a) of the Act and the Deemed Value Guidelines). Therefore, no changes are proposed to the deemed value rates for these stocks. However, FNZ welcomes any feedback on these settings.

11. FNZ acknowledges that if the TACCs of these stocks are varied, subsequent changes in fishing behaviour and the ACE market may result in the need for deemed values to be re-evaluated in future.

12. For more information on the current management settings for SNA 2, SPO 2, and JDO 2, see the Fisheries Infosite. For general information about fisheries management in New Zealand, see our fisheries management webpage, and our webpage about the Quota Management System (QMS).

Finfish Plan – Stock complex management

13. The National Inshore Finfish Fisheries Plan (**Finfish Plan**) sets out five focus areas for inshore finfish stocks to progress an ecosystem-based fisheries management approach. One of the key focus areas is integrated multi-stock management, which involves identifying and managing stocks that are commonly caught together. FNZ has combined the reviews of SNA 2, SPO 2, and JDO 2 within this consultation paper because they are commonly caught together within the Fisheries Management Area 2 (**FMA 2** - Central East) mixed trawl fishery complex.

14. There is no new information to support a review of catch settings of other stocks in the complex, but potential impacts of the proposed options on these other stocks are considered below.

Table 2: Key links between the stocks being reviewed and others in the FMA 2 inshore mixed trawl complex.

Snapper (SNA 2)	Rig (SPO 2)	John dory (JDO 2)
Snapper is primarily caught in trawl fisheries around East Cape (SNA 2N) and in Hawke Bay (SNA 2S), targeting tarakihi (TAR 2), red gurnard (GUR 2), and to a lesser extent, snapper (SNA 2), and trevally (TRE 2). The portion of SNA 2 caught while targeting snapper has reduced in recent years (Figure A4). Fishers are reporting increased abundance of snapper across FMA 2. This is consistent with CPUE which appears to have increased broadly across the different statistical areas in FMA 2 and has increased in all the main target fisheries.	Rig is primarily caught around Gisborne and Hawke Bay, taken as bycatch in bottom trawl fisheries targeting tarakihi (TAR 2), red gurnard (GUR 2) and flatfish (FLA 2), while the set net fisheries target rig (SPO 2), school shark (SCH 2), and to a lesser extent flatfish (FLA 2), blue warehou (WAR 2), and blue moki (MOK 1) (see Figure A5). Similar to SNA 2, CPUE for SPO 2 has been increasing broadly across these areas and fisheries.	John dory is taken off the east coast (Gisborne and Hawke Bay) by bottom trawl primarily targeting tarakihi (TAR 2) and red gurnard (GUR 2). JDO 2 is also part of the FMA 8 (Central West) mixed trawl fishery complex. On the west coast (mainly in North Taranaki Bight and Cook Strait) JDO 2 is caught as bycatch in trawl fisheries targeting red gurnard (GUR 8), tarakihi (TAR 8), snapper (SNA 8), and jack mackerel (JMA 7). Over recent years there has been a decline in effort and catch for JDO 2, primarily from the Taranaki Bight area on the west coast.

15. Of these linked stocks, there are no sustainability concerns associated with GUR 2, TRE 2, SNA 8, or JMA 7. For GUR 2, an updated CPUE and characterisation was recently completed in 2024 and biomass of the stock was estimated to be at or above its target (40-60% probability), with overfishing unlikely (<40% probability) to be occurring. TRE 2 is considered to be part of the TRE 1 Bay of Plenty sub-stock, and a recent (2022) assessment concluded that the stock was likely to be above its target. The SNA 8 and JMA 7 stocks are both above their respective management targets and proposed for potential TAC and TACC increases as part of this sustainability round (the relevant consultation documents are available here, also see the Fisheries Assessment Plenary).

16. TAR 2 is part of the East Coast tarakihi stock, which is currently subject to a time-constrained rebuild plan[1] and a close monitoring regime due to low abundance (currently below the biomass soft limit). Any increase to the TACs of SNA 2 and/or SPO 2 could in theory lead to an increase in tarakihi catch given that they are caught together. However, catch of TAR 2 is managed under its own TACC, which was recently reduced in 2022 to support its rebuild. The TAR 2 TACC is already fully utilised and there are high deemed penalties for over catch, which will discourage catch in excess of the TACC.

17. Due to the limited ACE available for TAR 2, an increase to SNA 2 could potentially lead to tarakihi becoming a choke species.[2] However, it should be noted that in the southern area (SNA 2S) snapper is mainly caught inshore around Hawke Bay, while tarakihi is caught offshore. A possible result of this could be that an increase in the TACC for snapper leads to more fishing effort in SNA 2S (Hawke Bay) where tarakihi is less likely to be a choke species.

18. It is also possible that a large reduction in the TACC of JDO 2 could lead to John dory becoming a choke species in some areas (e.g. in SNA 8). However, FNZ considers the risk to be low given that it has been significantly under caught in recent years and catch of JDO 2 remained low (and even declined further) following the previous increase to the TACC of SNA 8 (from 2021).

19. The statuses of other linked stocks in the relevant fishery complexes (FLA 2, WAR 2, MOK 1, GUR 1, & TAR 8) are unknown. These fisheries are generally smaller and less likely to be affected by changes to SNA 2, SPO 2, or JDO 2, compared with the main target species identified above (GUR 2 and TAR 2).

20. FNZ will continue to monitor these associated stocks following any changes to SNA 2, SPO 2, and/or JDO 2 and further actions will be considered if needed to ensure sustainably.

[1] Eastern Tarakihi Management Strategy and Rebuild Plan.

[2] In a mixed fishery, a choke species is a stock whose available quota is exhausted while other stocks still have quota available to the fisher. In this instance it restricts the fisher's ability to continue to fish for stocks where quota is still available.

Snapper (SNA 2) Options

Option 1 – retain current settings (status quo)

Benefits	This option is the most cautious with respect to ensuring sustainability and, of the options proposed, provides the most certainty that the stock will be resilient to potential cyclone impacts on recruitment. Abundance of snapper is likely to remain high and may increase further under this option. This could benefit non-commercial utilisation through increased catchability and in turn, reduced fishing costs. Higher abundance could also help to broaden the age and size structure of the population. This could result in a greater quantity of bigger and older fish in the population. Retaining the TACC could potentially result in lower fishing effort in some areas (due to snapper avoidance), but this may lead to increased effort in other areas. FNZ considers that overall, it is unlikely that this option would significantly alter fisher behaviour, and it is unlikely it will lead to an increase in overall fishing effort. Therefore, it is considered extremely unlikely that this option will lead to any increase in impact on the aquatic environment or interdependent stocks (see Page 13 below for more information on interdependence of stocks, and from Page 19 for information on environmental impacts).
Risks	Retaining the current TAC would forgo the potential utilisation opportunity. The recreational allowance setting under this option does not account for current levels of recreational catch. Recreational catch is estimated to be 35% above the allowance. An increase to the allowance would be required to ensure it adequately allows for existing harvest. Commercial fishers are making significant efforts to avoid catching snapper but are still having difficulty balancing catch ACE due to the high abundance and wide distribution of snapper. Retaining the TACC will likely continue to constrain commercial utilisation. Retaining the TACC may also prevent fishers from more efficiently targeting other species associated with snapper due to the low availability of SNA 2 ACE and likelihood of high deemed value penalties for snapper bycatch. This issue would be further exacerbated if snapper abundance continues to increase.

Option 2 – 20% TAC increase

Benefits	The recreational allowance under this option would fully account for the current level of recreational catch. This reflects that abundance of snapper is high, and that this higher level of recreational utilisation (122 tonnes annually) is sustainable. This option would support a small increase in commercial utilisation. A large portion of the utilisation benefit for the industry would be realised through higher profitability of landing target species, rather than through the increase in revenue from snapper. It is estimated that under this option, increased landings of snapper could provide approximately $520,000 more in revenue compared to the 2022/23 fishing year (this does not consider other costs, nor does it reflect profitability or what fishers will receive). It is based on a 2024 port price of $6.89/kg, which is higher than the 2023 port price of $5.37/kg (thus, revenue would also increase under the *status quo*).
Risks	Abundance appears to have increased rapidly in recent years and may continue increasing. This increase may be too conservative and could unnecessarily constrain utilisation. There is uncertainty regarding longer term cyclone impacts on the stock (see Option 3 risks below). This option is less likely to ensure resilience to these potential impacts compared to Option 1. There is a risk that increased removals of snapper would lead to lower stock abundance, which could have flow on environmental impacts. There is evidence from other areas of New Zealand that reduced abundance of predators (such as large snapper) can contribute to the formation of low biodiversity 'kina barren' areas. Abundance of snapper in the area is high and increasing, and it is uncertain whether this proposed increase in TACC would reduce the effective predation of snapper enough to contribute to development of kina barrens. This is because the biomass of snapper required to meaningfully fulfil their ecological role is unknown. Logically, the risk is likely to be higher under this option compared with the status quo. However, the level of risk cannot be quantified based on the limited information available (see '*Interdependence of stocks'* below on Page 13).

Option 3 – 30% TAC increase

Benefits	The recreational allowance under this option would fully account for the current level of recreational catch. This reflects that the higher level of recreational utilisation (122 tonnes annually) is sustainable. It is estimated that under this option, increased landings of snapper could provide approximately $990,000 more in revenue compared to the 2022/23 fishing year. The larger TACC increase under this option would help to support greater utilisation, allowing the industry to better target other inshore species associated with snapper. This could enable greater efficiency and flexibility for commercial operators, which could also lead to increased profitability. It may also better enable fishers to target gurnard in Hawke Bay, while avoiding tarakihi (this is currently difficult due to the high inshore abundance of snapper and lack of available SNA 2 ACE).
Risks	As the highest increase proposed, this option is the least cautious with respect to sustainability and presents the highest risk of increased environmental impacts. While abundance of snapper appears to be high and increasing, post-cyclone data is limited and there is uncertainty regarding potential long-term impacts from the cyclone on snapper recruitment. Any potential adverse effects from the cyclone on the snapper nursery area in Wairoa Hard (in Hawkes Bay) will not be fully apparent for another 4-5 years when those fish are expected to be recruited into the fishery (see further discussion on this below under '*Environmental conditions affecting the stocks - Cyclone Gabrielle*' on Page 14). This option is the least likely to ensure resilience to these potential impacts. There is a risk that more removals of snapper would lead to lower abundance, which could have flow on environmental impacts. As with Option 2, it is uncertain whether this TACC increase would reduce the effective predation of snapper enough to contribute to the development of kina barrens. Logically, the risk is likely to be higher under this option compared with both Options 1 and 2, but the relative risk cannot be quantified with the limited information available (see '*Interdependence of stocks'* below on Page 13).

21. An update to the partial quantitative assessment of SNA 2 has not been scheduled within FNZ's 2024/25 research plan. If commissioned for the next research year (2025/26) it would be completed in 2026 at the earliest. Seafood NZ (Inshore Council) has suggested that they may be able to support funding of an earlier update for 2024/25 if the TACC of SNA 2 is increased in 2024. This would provide an earlier update to CPUE data which would support better monitoring of the stock next year following any TAC changes. FNZ notes that if the assessment update is funded by Seafood NZ for 2024/25, any results would still be presented and independently assessed through FNZ's Inshore Finfish Working Group and the 2025 Fisheries Assessment Plenary.

Rig (SPO 2) Options 

Option 1 – retain current settings (status quo)

Benefits	This option is the most cautious with respect to ensuring sustainability and resilience to cyclone impacts. It is unlikely that this option will alter fisher behaviour so it is considered extremely unlikely this will lead to an increase in fishing effort. Therefore, it is considered extremely unlikely that this option will lead to an increase impact on aquatic environments or interdependent stocks (see Page 13 below for more information on interdependence of stocks, and from Page 19 for information on environmental impacts).
Risks	Retaining the current TAC would forgo the potential utilisation opportunity. Abundance is high and may continue to increase further, which could lead to constraining commercial utilisation. A large portion of SPO 2 is caught as bycatch in commercial trawl and setnet fisheries and commercial fishers find it difficult to avoid catching rig while targeting other species. Retaining the TACC may prevent commercial fishers from more efficiently targeting other species associated with rig (e.g. red gurnard in the trawl fishery, and school shark in the setnet fishery) due to the risk of high deemed value penalties for rig bycatch. This issue would be further exacerbated if rig abundance continues to increase.

Option 2 – 20% TAC increase

Benefits	This option would provide for a small increase in commercial utilisation of SPO 2. It is estimated that under this option, increased landings of rig could provide up to $290,000 more in revenue compared to the 2022/23 fishing year (based on the current port price of $5.33/kg). The TACC increase under this option may help to improve the efficiency and flexibility of commercial operators by allowing more bycatch of rig while targeting other species.

Risks	This increase could unnecessarily constrain commercial utilisation if the apparent trend of increased abundance continues and more rig are landed as incidental bycatch. This increase could lead to increased effort in the rig setnet target fishery. Environmental impacts from the fishery are expected to increase proportionally with increased effort (see from Page 19 for information on current impacts). There remain uncertainties regarding the impact of recent cyclones on the longer-term recruitment of rig. This option would provide less resilience to potential impacts on recruitment compared with Option 1.

Option 3 – 30% TAC increase

Benefits	This option would provide for a moderate increase in commercial utilisation of SPO 2. It is estimated that under this option, increased landings of rig could provide up to $370,000 more in revenue compared to the 2022/23 fishing year (based on the current port price of $5.33/kg). If rig continues to increase in abundance, this option is less likely to constrain utilisation. The TACC increase under this option is larger and would allow for more bycatch of rig while targeting other species. Thus, it is more likely to support improved efficiency and flexibility of commercial operators (in the associated setnet and trawl fisheries).
Risks	As the highest increase proposed, this option is the least cautious with respect to sustainability. There remain uncertainties regarding the impact of recent cyclones on the longer-term recruitment of rig (see further discussion on this below under '*Environmental conditions affecting the stocks - Cyclone Gabrielle*' on Page 14), This option is likely to provide less resilience to potential impacts compared with Options 1 and 2. If this increase leads to increased fishing effort in the fisheries catching rig, environmental impacts in those fisheries are expected to increase proportionally (see from Page 19 for information on current impacts). Sharks like rig can take a long time to recover if fishing mortality is rapidly increased (given their low fecundity and productivity).

22. Fisheries New Zealand has commissioned a research project for 2024/25 to update characterisations and CPUE for school shark stocks, and a project to update characterisations and CPUE for rig stocks is scheduled for 2025/26. The outputs of these projects will provide FNZ with updated information (including more post-cyclone data) to inform further management of SPO 2.

John dory (JDO 2) Options

Current settings: No TAC and allowances are set, the TACC is 269.5 tonnes.

FNZ does not consider retaining the current settings is appropriate because a TAC and allowances have not been set.

Option 1 – Set the TAC and allowances and retain the current TACC

Benefits	The current TACC allows for substantial commercial utilisation of the stock.
Risks	The latest assessment (based on the southeast North Island part of the stock) determined JDO 2 is likely to be below its management target (and by proxy, below maximum sustainable yield (***MSY***).[3] FNZ considers there to be a high risk that this option may not enable the stock to move towards or above a level that supports *MSY*, which would be inconsistent with the Minister's requirement for setting the TAC under section 13(2A) of the Act (refer to Page 16 '*Matters for assessment under section 13(2A) of the Act – SNA 2 and JDO 2*'). CPUE has been increasing under recent catch levels, but it is unknown whether this would continue under higher catch levels. Thus, there is uncertainty regarding the sustainability of the TACC if it were to be fully utilised. There is no post-cyclone CPUE data available for JDO 2. Thus, there is a high level of uncertainty regarding what impact Cyclone Gabrielle may have had on the abundance of the stock. There is also uncertainty regarding what impacts the cyclone may have had for recruitment and habitat of JDO 2. This option would provide less resilience to potential cyclone impacts compared with Options 2 and 3.

[3] Maximum sustainable yield is the largest long-term average catch or yield that can be taken from a stock under prevailing ecological and environmental conditions.

Option 2 – Set the TAC and allowances and decrease TACC by 30%

Benefits	The TACC would be reduced to 189 tonnes under this option. This would still allow an increase in commercial catches from current levels (up to 80 tonnes higher than the average commercial catch of JDO 2 for the last five years) (Figure A1). The lower commercial catch limit under this option would reduce the potential risk to sustainability should catches of JDO 2 increase. A reduction in the TACC recognises that the stock as a whole may be below *MSY*. This option is more cautious than Option 1 with respect to potential cyclone impacts on the stock.
Risks	There is some risk that this reduction may not be large enough to ensure sustainability (albeit a lower risk than Option 1). While the overall TACC of JDO 2 is significantly underutilised at present, there are some individual quota and ACE holders who are fully utilising or close to fully utilising ACE. The reduction in available ACE under this option is likely to materially increase costs for these fishers (as they would need to acquire more ACE to sustain current operations). This option would provide more resilience to potential cyclone impacts compared with Option 1, but less compared with Option 3 (a bigger TACC reduction).

Option 3 – Set the TAC and allowances and decrease TACC by 50%

Benefits	As the largest reduction proposed, this option is the most cautious with respect to sustainability and potential cyclone impacts on the stock. Under this option the TACC would be reduced to 135 tonnes, which is 26 tonnes above average commercial catch for the last 5-year period, or 11 tonnes above average catches for the last 10-year period (Figure A1). This reduction would significantly limit how much JDO 2 catch could increase from recent levels, which would substantially reduce any potential sustainability risk. This reduction places more weight on the fact that the stock as a whole may be below *MSY*.
Risks	The large reduction in available ACE under this option is likely to materially increase costs for fishers who are currently utilising most or all the ACE they hold. The commercial CPUE for JDO 2 has been increasing under recent catch levels, suggesting that the stock is moving higher toward *MSY*. There is some risk that this TAC could result in lost utilisation opportunities. The large TACC decrease under this option could lead to constraining commercial utilisation of other species caught in the same fisheries as JDO 2 (e.g. gurnard, snapper, trevally) in the immediate future. This could inhibit the efficiency and flexibility of commercial operators in the area, particularly if the catch limits of SNA 2, SPO 2, SNA 8, and/or JMA 7 are increased at the same time.

23. There are currently no research projects scheduled to update the partial quantitative assessment of JDO 2, but an update will be proposed for consideration within the 2025/26 research plan.

Who is affected by the proposed changes?

24. Commercial interests in these stocks include quota owners, vessel owner-operators and contract fishers in the catching sector, Licensed Fish Receivers (**LFR**s) (see Table 3 below) and retailers and exporters. The interests of these groups are represented through organisations such as Seafood New Zealand (Inshore Council), NZ Federation of Commercial Fishermen, and other local fisher's associations.

Table 3: Summary of quota owners, % settlement quota, permit holders, vessels landing the stock, and Licensed Fish Receivers (LFRs) involved with SNA 2, SPO 2, and JDO 2.

Stock	No. Quota owners	% of quota that is Settlement quota	No. permit holders landing the stock	No. vessels landing the stock	No. LFRs landed to
SNA 2	35	8.8%	26	33	19
SPO 2	33	9.6%	31	38	22
JDO 2	51	10.0%	44	54	26

25. There are recreational interests in all three stocks, with particular interest in snapper (mostly in the southern part of SNA 2 around Hawke Bay). These interests are represented by a range of individuals, groups such as the NZ Sport Fishing Council, and various local fishing clubs and associations.

26. Tangata whenua have both commercial and customary interests in these stocks. The Ngāti Porou Iwi Fisheries Forum (East Cape) and Mai Paritu tae atu ki Turakirae Iwi Fisheries Forum (East Coast from Paritu to Turakirae) represent iwi with interests in SPO 2, SNA 2, and the eastern portion of JDO 2 (**FMA 2**)– see Figure 1). The Te Tai Hauāuru Iwi Fisheries Forum and Nga Hapu o Te Uru o Tainui Iwi Fisheries Forum (West Coast of Waikato) represent iwi with interests in the western portion of JDO 2 (**FMA 8**) – see Figure 1).

Input and participation of tangata whenua

27. FNZ circulated a summary of the stocks proposed for review in this round (including SNA 2, SPO 2, and JDO 2) to the Chairs of the relevant Iwi Fisheries Forums (noted above). FNZ invited feedback from the forums and offered to provide more detailed information for any stocks upon request.

28. To date no specific feedback on these three stocks has been received, nor further information requested. FNZ will engage further with the Iwi Fisheries Forums during consultation. FNZ also welcomes any input from tangata whenua outside of this planned engagement.

Fishery characteristics and current settings

Commercial (TACC)

SNA 2

Snapper in SNA 2 is predominantly caught by commercial fishers as bycatch whilst bottom trawling for gurnard and tarakihi, followed by a snapper-trawl target fishery (Figure A4). Over the last decade virtually all (approximately 99%) commercial landings were trawl caught (Figure A2).

The TACC has remained at 315 tonnes since 2002. Over the last decade, annual landings of the stock (as reported from monthly harvest returns) have averaged 334 tonnes (see Figure A1).

SPO 2

Historically most rig caught commercially in SPO 2 was harvested by trawl. Over the past decade approximately two-thirds of landings were trawl caught, and approximately a quarter of landings were set net caught (Figure A3). More recently, a greater portion of commercial catch has been taken in the setnet fishery (about 50% of catch in the last fishing year) (Figure A3).

In the bottom trawl fishery, SPO 2 is predominantly caught as bycatch whilst targeting gurnard and tarakihi. In the setnet fishery, SPO 2 is mainly caught whilst targeting rig or school shark (Figure A5).

The TACC has been fully utilised or close to fully utilised for the past few decades (see Figure A1). It was last reviewed in 2020 and increased from 108 to 119 tonnes. Since that change (excluding 2020 which was affected by COVID), landings of SPO 2 have averaged 125 tonnes. It should be noted that while this was above the TACC, total ACE was not overcaught because additional ACE was available through carry-forward provisions under the Act.

JDO 2

John dory in JDO 2 is predominantly caught by commercial fishers as bycatch whilst bottom trawling for gurnard and tarakihi. Over the last decade virtually all (~ 99%) landings were trawl caught.

The TACC has remained at 269.5 tonnes since it was first set in 1986. Over the last decade, annual landings of the stock have averaged 124 tonnes (Figure A1). Landings have gradually declined since 2019, and in the most recent complete fishing year (2022/23) a total of 90 tonnes was landed (approximately a third of the TACC).

Customary Māori

Customary catch for SNA 2, SPO 2, and JDO 2 is provided for by the Fisheries (Kaimoana Customary Fishing) Regulations 1998, and regulations 50-52 of the Fisheries (Amateur Fishing) Regulations 2013 (Amateur Regulations).

In the last five years, FNZ estimates that approximately 1820 kg of SNA 2, 320 kg of SPO 2, and 40 kg of JDO 2 has been authorised for take under customary regulations (all in FMA 2). These estimates are highly uncertain and likely to be underestimates. Many authorisations issued are under regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013, where catches are not required to be reported. There is further uncertainty in these estimates because the reports use different units of measurement (bags, bins, buckets, individual fish counts) and FNZ has used nominal weights to obtain total estimates.

The customary allowance for **SNA 2** is currently set at 14 tonnes. FNZ considers this is likely to provide for customary interests in SNA 2 and does not have evidence to suggest a need for change.

The customary allowance for **SPO 2 i**s currently set at 5 tonnes. This was last reviewed and retained in 2020. FNZ considers this likely to adequately provide for customary interests in SPO 2 and does not have evidence to suggest a need for change.

Currently there is no customary allowance set for **JDO 2.** As there appears to be limited customary interest in JDO 2, FNZ is proposing that the allowance be set at nominal level of one tonne under all options.

FNZ welcomes feedback on whether the customary allowances proposed for these stocks are appropriate and sufficiently provide for customary harvest.

Recreational

Recreational controls used to manage harvest of SNA 2, SPO 2, and JDO 2 are summarised below under *'Assessment of stock proposals against section 11 of the Act – Existing controls that apply to the stock or area – section 11 (1)(b)'*. Further information is available on MPI's central fishing rules web page.

The table below provides the best available information on recent recreational harvest levels in SNA 2, SPO 2, and JDO 2. The combined harvest estimates sum data from the 2022/23 National Panel Survey of Marine Recreational Fishers (**NPS**) (Heinemann & Gray 2024, in prep.), estimates of Amateur Charter Vessel harvest and recreational take under section 111 of the Act (recreational harvest taken by commercial fishers).

Stock	NPS Harvest (tonnes)	Coefficient of Variation (± tonnes)	Amateur Charter Vessel Harvest (tonnes)	Harvest from s 111 (tonnes)	Combined harvest (tonnes)	Current recreational allowance
SNA 2	116.4	± 29.1	4.43	1.05	**121.88**	90
SPO 2	2.43	± 1.6	-	0.03	**2.46**	10
JDO 2	1.41	± 0.8	0.02	0.18	**1.61**	N/A

Recreational harvest of **SNA 2** has increased over the last decade, likely due to increased abundance/availability. Most of the recreational catch (about two thirds in 2023) comes from the southern portion of SNA 2 which includes Hawke Bay. The estimated recreational harvest in 2023 exceeds the current recreational allowance (and Option 1) but is within the recreational allowance proposed under Option 2 and Option 3 (122 tonnes).

The recent estimated harvest for **SPO 2** is within the current recreational allowance of 10 tonnes. FNZ considers this likely to adequately provide for recreational interests in SPO 2 and is therefore not proposing any change.

There is currently no recreational allowance set for **JDO 2**. FNZ is proposing that the allowance be set at a level of 2 tonnes under all options. This would provide for slightly higher than the level of estimated harvest in 2022/23 (1.61 tonnes).

Other sources of mortality caused by fishing

The allowance for other sources of mortality caused by fishing is intended to provide for unrecorded mortality of fish associated with fishing, including incidental mortality from fishing methods or illegal fishing. This is naturally difficult to quantify when considering the range of contributing sources and as a result there is uncertainty in the estimates used to set this allowance.

For inshore trawl fisheries with low observer and/or camera coverage, there is generally more uncertainty. Noting this uncertainty, the previous Minister of Fisheries in 2018 decided that the allowance should be set at an amount that equates to around 10% of the TACC for inshore trawl caught stocks, unless there is evidence to suggest a different level would be more appropriate.

SNA 2 and JDO 2 are virtually all trawl-caught and SPO 2 is caught about equally by trawl and setnet. These fisheries all have negligible observer coverage (<5% based on event-level data) and currently have limited on-board camera coverage. As there is no new information to suggest that a different level would be appropriate, FNZ is proposing that the allowances for other mortality for SPO 2, SNA 2, and JDO 2 be set at levels that equate to approximately 10% of the respective TACCs (under all options).

FNZ notes that on-board cameras are scheduled to be rolled out on trawl vessels in the East Coast North Island later this year, and on setnet vessels in the East Coast North Island in early 2025. This should help to provide more certainty and better inform these settings in the future.

Additional supporting information and legal context

29. There are additional figures and more information on pages 11-15 below which support the above analysis and proposed options.

30. On the following pages (page 16 onward) FNZ has provided a series of tables outlining key matters that support an initial assessment of the proposed changes against provisions of the Fisheries Act 1996. This includes matters relevant to sections 9, 10, 11, and 13 of the Act, as well as mātaitai reserves and other customary management tools which are relevant to the Minister's decision making under section 21(4).

31. For information on the relevance of sections 5 (Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992), and 8 (Purpose) of the Act, as well as detail on the statutory considerations relevant to TAC decisions, please see the **Legal Appendix** ('*Overview of legislative requirements and other considerations in relation to sustainability measures for the 2024 October round'*) on our consultation webpage.

How to have your say

32. We welcome your views on these proposals. Please provide detailed information and sources to support your views where possible.

- Which options do you support for the TACs and allowances of the stocks? 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 for each stock? Why?
- What are your thoughts on the ecological importance of these stocks?
- Do you have any concerns about potential impacts of the proposed options on the aquatic environment?
- Is there any literature or research that is relevant and has been omitted in this paper?
- Do you have any feedback on the current deemed values settings for any of these stocks?

33. FNZ invites you to make a submission on the proposals set out in this discussion document. Consultation closes at 5pm on **Monday 29 July 2024**.

34. Please see the FNZ sustainability consultation webpage 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.

Supporting information

Additional figures

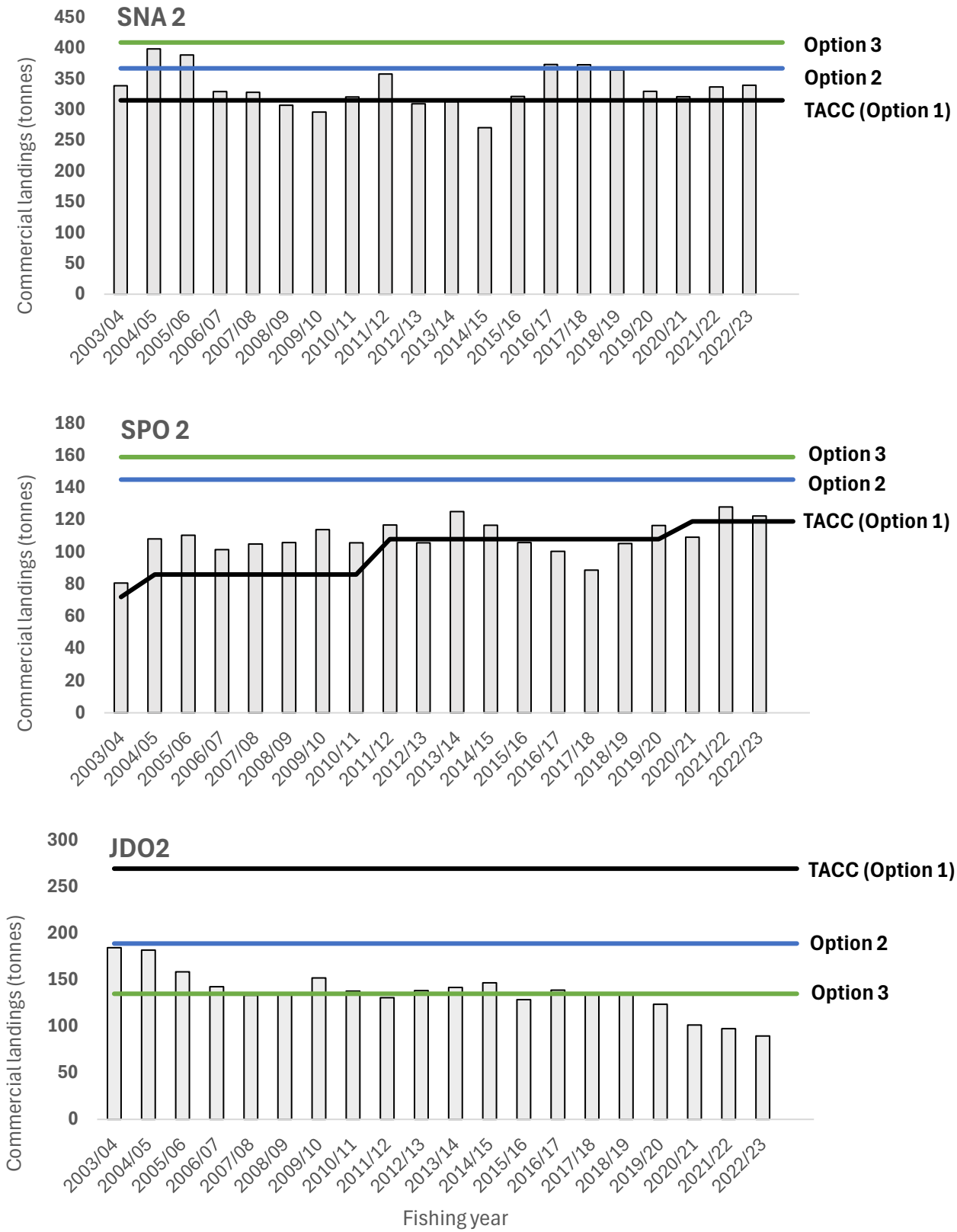

Figure A1 – Commercial landing histories (in tonnes) since the 2003/04 fishing year for SNA 2, SPO 2, and JDO 2, with the proposed management options for each stock overlaid (proposed TACC levels). Figures showing complete catch histories (including data prior to 2003/04) are available for each stock within their respective chapters in the Fisheries Assessment Plenary, May 2024.

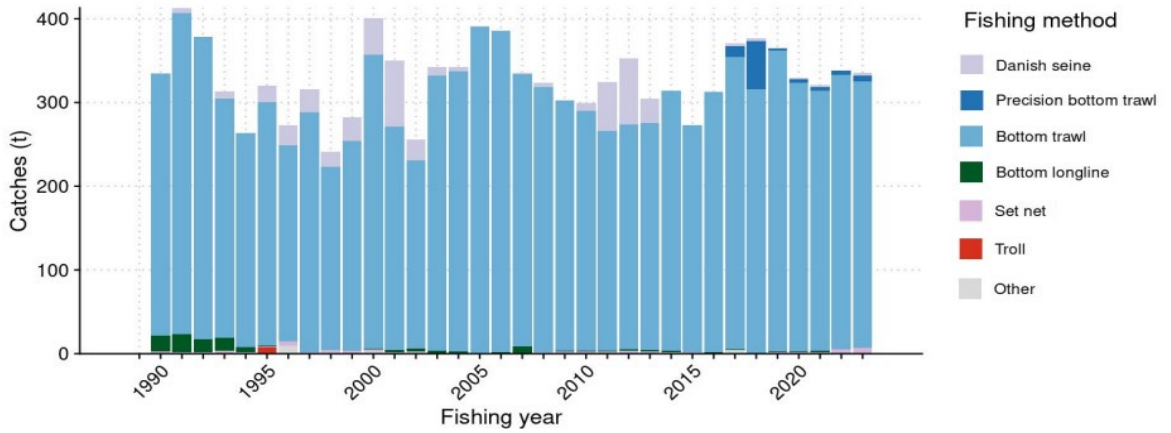

Figure A2 – SNA 2 (snapper) characterisation of commercial fishing by method and fishing year (Middleton 2024, FAR in prep.).

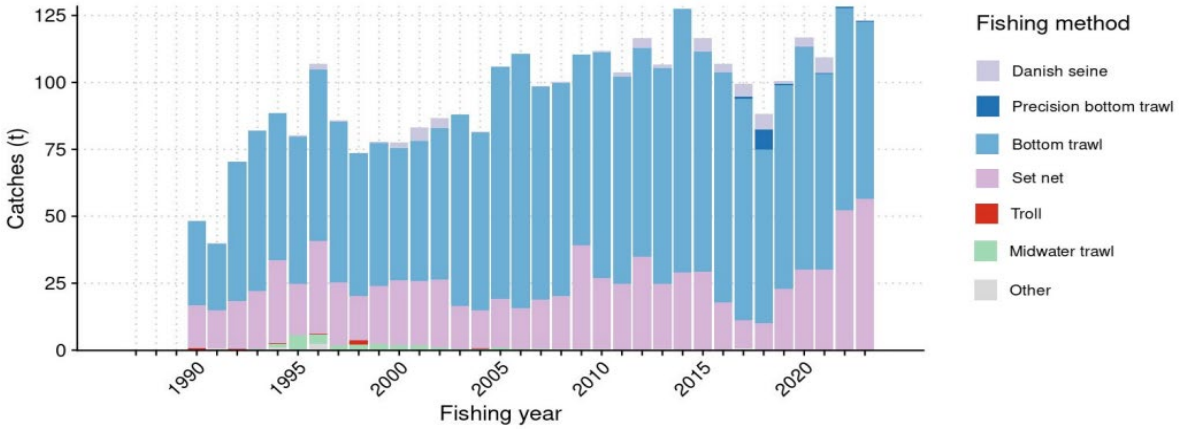

Figure A3 – SPO 2 (rig) characterisation of commercial fishing by method and fishing year (Middleton and Starr 2024, FAR in prep.).

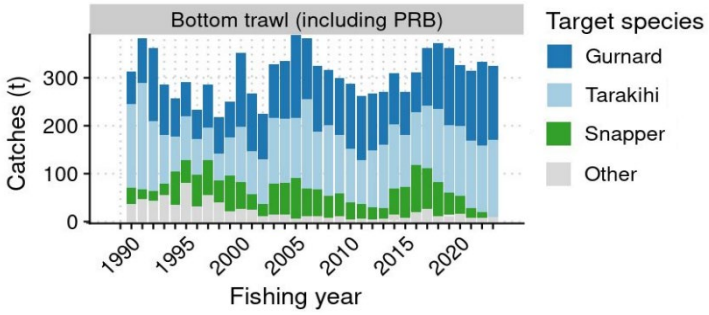

Figure A4 – Catch of SNA 2 (snapper) by target species and fishing year, in the bottom trawl fishery (Middleton 2024, FAR in prep.).

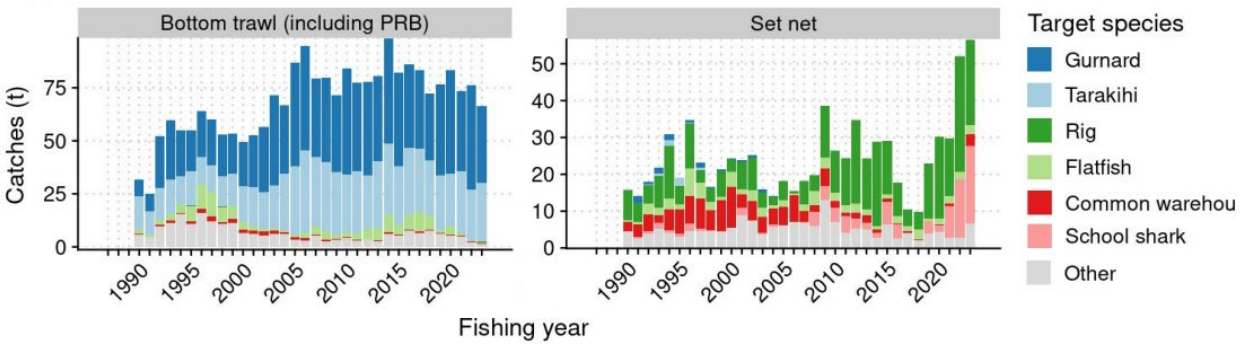

Figure A5 – Catch of SPO 2 (rig) by target species and fishing year, in both the bottom trawl and setnet fisheries (Middleton and Starr 2024, FAR in prep.).

Information on biology, interdependence, and environmental factors

Biological characteristics

Snapper (SNA 2)

35. Snapper is generally considered to be a low productivity species. They are long-lived (may live up to 60 years or more), grow up to 105 cm total length, and have a very low natural mortality. These characteristics are offset to some degree by their relatively young age of maturity (3 to 7 years) and high fecundity, being serial broadcast spawners.

36. Snapper are demersal fish (live close to the sea floor) found down to water depths of about 200 m, but are most abundant in 15-60 m.

37. Recent assessments for adjacent snapper stocks (SNA 1, 7 & 8) suggest that snapper in northern New Zealand may be currently experiencing a period of higher productivity with strong recruitment.

Rig (SPO 2)

38. Rig is an elasmobranch and has generally low productivity. They are thought to live up to 20 years, and reach maturity at 4-8 years, or 85-100 cm length. The number of young produced increases exponentially with the length of the mother and ranges from 2 to 37 individuals (with a mean of ~ 11). These characteristics can make them more vulnerable to overfishing compared with higher productivity species.

39. Rig make extensive coastal migrations, with one tagged female moving at least 1160 km. Young are generally born in shallow coastal waters, especially in harbours and estuaries, and are presumed to later move into deeper water.

40. New Zealand has international obligations under the National Plan of Action for the Conservation and Management of Sharks (NPOA Sharks 2013) to maintain elasmobranchs at or above target. The NPOA Sharks sets goals and objectives for maintaining the biodiversity and long-term viability of New Zealand shark populations.

John dory (JDO 2)

41. John dory has a relatively high productivity compared to snapper or rig. They have a short generation time (living up to 12 years). Both males and females grow rapidly initially, reaching 12 to 18 cm (standard length) after the first year. Females grow faster and reach a greater maximum length, maturing at a size of 29 to 35 cm. They have high fecundity and are serial broadcast spawners.

42. John dory are common in inshore coastal waters of northern New Zealand to depths of 50 m.

43. For a more detailed summary of biological characteristics for these stocks, see the relevant species chapters of the Fisheries Assessment Plenary, May 2024.

Interdependence of stocks

Snapper (SNA 2)

44. As one of the most abundant demersal predators found in the inshore waters of northern New Zealand, snapper are an integral part of northern coastal marine ecosystems. They occupy a wide range of habitats, including rocky reefs and areas of sand and mud bottom.

45. The importance of snapper as a food source for other predators is poorly understood. There is also limited information regarding their role as a predator. However, they are known to be opportunistic and generalist predators with a broad diet including crustaceans, polychaetes, echinoderms, molluscs, and fish. As they increase in size, harder bodied and larger diet items increase in importance (e.g., fish, echinoids, hermit crabs, molluscs, and brachyuran crabs).

46. There is evidence to suggest that large predators such as snapper can influence the environment that they occupy. On some rocky reefs the recovery of predators inside marine reserves (including snapper and rock lobster) has led to the recovery of algal beds (through predation exerted on herbivorous sea urchins / kina).

47. Much of the available information describing the relationship between fishing and kina barrens comes from Hauraki Gulf/Northland (SNA 1). Due to the similarity of the habitat and the ecological role of snapper as predators, it is reasonable to assume that the findings from this area are also broadly relevant to SNA 2.

48. FNZ is not aware of any published literature on the role of fishing in the development of kina barrens or the distribution of kina barrens in SNA 2. Data from a modelling study of the Te Tapuwae o Rongokako Marine Reserve (16 km north of Gisborne) indicates that there are areas of reef in SNA 2 covered in only coralline turf or crustose coralline algae and lacking in macroalgae, which the authors of the study

classified as 'urchin barrens' (Pinkerton et al., 2008). However, they attributed their occurrence to silt deposition or sand scour (rather than predation effects).

49. A Sustainable Seas project, '*Huataukina o hapū e! Prosperous moana; prosperous people*' in its proposal noted that kina barrens were increasingly problematic in the Gisborne Region. There have also been anecdotal reports of kina barrens from divers in parts of Wellington Harbour, with a citizen science project underway to monitor and restore parts of the area (Miller and Peat 2023). The findings of these projects are yet to be published.

50. The majority of literature on the causes of kina barrens focuses on reefs in northeastern New Zealand where fishing effects on top predators of kina are considered a primary factor (Doheny et al. 2023). The extent of kina barrens and relative importance of contributing factors appears to vary regionally across New Zealand, although research is limited outside of northeastern New Zealand.

51. Based on the available information (summarised above), a potential consequence of increasing the TAC of SNA 2 is that it could contribute to reduced abundance of snapper in some areas, and this could in turn reduce predation on kina and increase the risk of local kina barren formation. The overall level of snapper biomass required to maintain its role in the ecosystem (i.e., in relation to predator prey interactions and prevention of trophic cascades) is unknown, but it is likely that a higher abundance would increase the certainty they will maintain this role.

52. The overall level of risk (of trophic cascades) cannot be quantified based on the limited information available.

53. There are further uncertainties in the risk of reducing the abundance of snapper due to the effects of recent cyclones, especially the potential impacts of sediment and debris on shallow coastal habitats, and the absence of macroalgae at shallow depths in recent surveys from Gisborne and Hawke's Bay (Leduc et al, 2024). The cyclone will have affected the abundance of other key predators in the ecosystem, including rock lobster (another key predator of kina). The increased sedimentation and resulting loss of macroalgae in some areas, combined with the effects of fishing, may have a cumulatively higher impact on the recovery of fish populations (including snapper).

Rig (SPO 2)

54. Rig is a generalist predator and feeds on a wide variety of benthic invertebrates, especially brachyuran and pagurid crustaceans, echiurans and molluscs. There is limited information regarding predators of rig, and regarding potential interdependence with other stocks.

55. FNZ considers that the proposed increases to the TAC of SPO 2 could have some effect on associated prey species if effort in the associated fisheries increases, however, the specific impacts are uncertain, and their extent cannot be quantified based on the information available.

John dory (JDO 2)

56. There is limited information regarding important predators and prey of John dory, and regarding potential interdependence with other stocks. Adult John dory feed on a variety of fishes, particularly baitfish such as anchovies and pilchards (Godfriaux 1970; Russell 1983).

57. The proposed TAC settings (and TACC reductions) for JDO 2 are unlikely to impact levels of fishing effort (given that current catch levels would not be constrained), and as such it is unlikely that the changes would impact their associated predator and prey interactions.

Environmental conditions affecting the stocks - Cyclone Gabrielle

58. In February 2023, Cyclone Gabrielle caused damage across parts of the North Island, especially the Tairāwhiti/Gisborne and Hawke's Bay regions. The cyclone caused significant flooding and damage to the coastal environments in FMA 2, with significant inflows of freshwater, increased sedimentation, and input of land-based debris.

59. Following the cyclone, 70 towed camera transects were conducted at 36 sites along the Hawke's Bay and Gisborne regions to assess the likelihood of sediment impacts to benthic ecosystems. Key observational evidence includes: (1) fresh muddy deposits and sediment smothering of benthos; (2) organisms in poor condition; and (3) absence of macroalgae at shallow depths (Leduc et al, 2024). Using these qualitative measures sediment impacts are highly likely to have occurred at 11 locations. For most of these locations, demonstrating a direct link to Cyclone Gabrielle and drawing quantitative conclusions remains problematic without survey data prior to the event. The likely exception is Wairoa

Hard,[4] where comparison of pre- and post-cyclone data from imagery shows that while kelp, other macroalgae, and sponges were present before the cyclone they were almost entirely or completely absent after the cyclone. Whether this loss of biogenic habitat has led to reductions in associated fish populations is unclear; however, turbidity levels in the wake of the cyclone are likely to have been sufficiently elevated to cause direct deleterious impacts on fish in the area.

60. Several other areas (Cape Kidnappers, inshore reefs off Poverty Bay, Anaura Bay, Waipiro Bay, Whakariki Point, and Waikori Bluff (Gisborne)) were also assessed as having a high likelihood of sediment impacts, while others showed no indication of being strongly impacted by sediment. Collectively, these observations suggest a range of benthic disturbance from river plumes that affected parts of the Gisborne coastline differently. Leduc et al. (2024) noted that most if not all of the locations impacted by sediments are naturally exposed to high turbidity conditions and periods of deposition. However, the scale of Cyclone Gabrielle will likely have exacerbated suspended sediment loads in the region through an abundance of sediment supply.

61. The sedimentation in nearshore habitats likely impacted inshore stocks (including SNA 2, SPO 2, and JDO 2) directly as well as juvenile and birthing habitat. For SNA 2 and SPO 2, recent CPUE estimates for the exploited populations are high and show a continued increase from pre-cyclone estimates. This suggests that direct impacts of the cyclone on SNA 2 and SPO 2 adult populations may have been limited. Catch rates in 2023 were observed higher in certain offshore areas, suggesting that adult fish may have moved into deeper waters.

62. The impact of the cyclone on adult populations in JDO 2 is unknown as there is no JDO 2 post-cyclone CPUE data.

63. The longer-term impacts of the cyclone for SNA 2, SPO 2, and JDO 2 are uncertain. Nursery habitats for all of these species are in shallower waters which likely suffered more from sedimentation and debris impacts, and there is a known nursery area for snapper and other finfish in Wairoa Hard (in Hawkes Bay), which as described above, was significantly impacted by the cyclone. Any impacts on the juvenile populations of SNA 2, SPO 2, and JDO 2 due to the cyclone, and the flow on effects on stock recruitment, would not be fully apparent for another 4-5 years when those fish are expected to be recruited into the fisheries as adults.

[4] The Wairoa Hard (named for its coarse cobble substrate) is an area of near-shore marine habitat between the Moeangiangi and Wairoa Rivers that goes out to a 30 m depth. It provides a nursery ground for juvenile fish including snapper (Morrison et al. 2014). According to the Hawke's Bay Regional Council, it also provides a nursery for John dory, trevally, hammerhead and bronze whaler sharks. The area has been closed to commercial take of finfish for many years.

Relevant provisions of the Act

Key matters for assessment of the proposals against section 13 of the Act

Matters for assessment under section 13(2)(a) of the Act – SPO 2	
Section 13(2)(a)	For SPO 2, biomass can be reliably estimated in relation to *MSY* using its partially quantitative assessment (based on CPUE) – it indicates that exploitable biomass is currently above *MSY* and increasing (see Figure 2(c) above). As biomass of the stock is above *MSY* and there is a desire to maintain the stock at or above this level, any change to the TAC of SPO 2 would be made under section 13(2)(a) of the Act. Under this provision of the Act, the Minister must set a TAC using the best available information that is consistent with maintaining the stock at or above a level that can produce *MSY*, while also having regard to the interdependence of stocks. FNZ's initial view is that all the TAC options proposed for SPO 2 (which range from maintaining the status quo to applying up to a 30% TAC increase) would be consistent with the objective of maintaining the stock at or above *MSY*. Forward projections are not available to determine precisely where the stock would be relative to *MSY* following changes to the TAC, but logically, a lower TAC level is more likely to maintain the stock at higher level relative to *MSY*.
Section 13(2)(a) Interdependence of stocks	FNZ considers that the proposed increases to the TAC of SPO 2 could have some effect on associated prey species if effort in the associated fisheries increases. However, rig is known to be a generalist predator. Any specific impacts for other species are uncertain, and the extent of these potential impacts cannot be quantified based on available information.
Matters for assessment under section 13(2A) of the Act – SNA 2 and JDO 2	
Section 13(2A)	Biomass can be reliably estimated in relation to *MSY* for the southern part of **SNA 2** (SNA 2S), but not for the northern part of SNA 2 (SNA 2N) as it does not have accepted reference points. Biomass can be estimated relative to *MSY* for the southeast North Island part of JDO 2, but not for the west coast North Island part of JDO 2. Moreover, the most recent estimate for the southeast North Island is not very reliable due to the lack of post-cyclone data for the stock. As biomass cannot be reliably estimated in relation to *MSY* for either of these stocks using the best available information, section 13(2A) applies when setting or varying the TACs. Under this section, the Minister must set TACs using best available information which are not inconsistent with the objective of maintaining the stocks at or above a level that supports *MSY*, or moving the stocks towards or above a level that can produce *MSY*, while having regard to the interdependence of stocks, the biological characteristics of the stocks, and any environmental conditions affecting the stocks. While biomass for SNA 2 (as a whole) cannot be reliably estimated in relation to *MSY*, the southern part of the stock is known to be above *MSY*, and CPUE for the northern part of the stock suggests abundance is high and rapidly increasing (indicating that it is also likely to be above *MSY*). Based on this information, FNZ's initial view is that all the options proposed for SNA 2 (which range from maintaining the status quo to applying up to a moderate 30% TAC increase) would not be inconsistent with the objective of maintaining the stock at or above *MSY*. While biomass for **JDO 2** cannot be reliably estimated in relation to *MSY*, the southeast North Island part of the stock was recently assessed to be below *MSY*, and this was prior to any impacts from Cyclone Gabrielle. Based on this FNZ is concerned that the stock as a whole may be below *MSY*. FNZ's initial view is that Options 2 and 3 (setting the TAC 30% or 50% lower) would not be inconsistent with the objective of moving the stock toward or above a level that supports *MSY*. However, FNZ considers there to be a high risk that Option 1 (retaining the current TACC) may not enable JDO 2 to move towards or above a level that supports *MSY*, which would be inconsistent with the Minister's requirement for setting the TAC under section 13(2A) of the Act. FNZ welcomes any feedback on this view, and any submissions in support or opposition of this option.

Section 13(2A)(b) Interdependence of stocks	**SNA 2** Based on the available information (detailed above under the *Interdependence of stocks* heading in 'Supporting information'), a potential consequence of increasing the TAC of SNA 2 is that it could contribute to reduced abundance of snapper in some areas, and this could in turn reduce predation on kina and increase the risk of local kina barren formation. The overall level of snapper biomass required to maintain its role in the ecosystem (i.e., in relation to predator prey interactions and prevention of trophic cascades) is unknown, but it is likely that a higher abundance would increase the certainty they will maintain this role. The overall level of risk (of trophic cascades) cannot be accurately quantified based on the limited information available. There are further uncertainties in the risk of reducing the abundance of snapper due to the effects of recent cyclones, especially the potential impacts of sediment and debris on shallow coastal habitats, and the absence of macroalgae at shallow depths in recent surveys from Gisborne and Hawke's Bay (Leduc et al, 2024). The cyclone will have affected the abundance of other key predators in the ecosystem, including rock lobster (another key predator of kina). The increased sedimentation and resulting loss of macroalgae in some areas, combined with the effects of fishing, may have a cumulatively higher impact on the recovery of fish populations (including snapper). **JDO 2** The proposed TAC settings (and TACC reductions) for JDO 2 are unlikely to impact levels of fishing effort (given that current catch levels would not be constrained), and as such it is unlikely that the changes would impact their associated predator and prey interactions.
Section 13(2A)(b) Biological characteristics of the stock	**SNA 2** The low productivity and low natural mortality of snapper can be considered offset by their early maturity and high fecundity, and recent assessments indicating that snapper stocks may be currently experiencing a period of higher productivity with strong recruitment. They can therefore be expected to have a moderate level of resilience to fishing pressure. **JDO 2** Due to their higher productivity, they are expected to be generally more resilient to changes in fishing pressure and less susceptible to overfishing.
Section 13(2A)(b) Environmental conditions	As highlighted above under *'Environmental conditions affecting the stocks'*, Cyclone Gabrielle caused sedimentation in nearshore habitats in FMA 2 which has likely impacted juvenile and birthing habitat of snapper and john dory (particularly in areas like Wairoa Hard). The full extent of these impacts and flow on effects for recruitment will not be fully understood until 4-5 years' time. This warrants some caution in relation to setting the TACs for SNA 2 and JDO 2. For SNA 2, the 2023 CPUE data (including post-cyclone data) suggests that abundance of the exploitable snapper population is currently still very high and has continued to increase in recent years (Figure 2). The magnitude of the recent CPUE increases (4-fold increase for SNA 2S and 3-fold increase for SNA 2N since 2016) provides FNZ confidence that the TAC of SNA 2 can be sustainably increased. However, to acknowledge the need for caution in response to potential cyclone impacts on recruitment, FNZ is only proposing options for up to a moderate increase (30% TAC increase) at this time. For JDO 2, there is no post-cyclone CPUE data and overall, there is a high level of uncertainty regarding what impact the cyclone may have had for the stock and its future recruitment. Thus, a higher level of caution is warranted in setting the TAC for JDO 2, and FNZ considers that TACC reductions would be appropriate to mitigate risks.
Section 13(3) Factors to have regard to in considering the way and rate the stock is moved towards or above B_{MSY}	Section 13(3) is not considered relevant to the TAC decision for SNA 2 because the options only aim to maintain the stock at or above *MSY*. They are not intended to move the stock to a certain level in a certain way or rate. On the other hand, section 13(3) is considered relevant to the proposed TAC changes for JDO 2 because there is a concern that the stock is currently below *MSY*, and the proposed options aim to move the stock towards or above a level that can produce *MSY*. Forward projections are not available to help FNZ determine what way and rate these options would move the stock in relation to *MSY*. However, logically, a lower TAC (and larger reduction to the TACC) would move the stock towards or above a level that supports *MSY* faster than a small reduction or no change.

	In considering the way and rate at which the stock is moved, the Minister must have regard to relevant social, cultural, and economic factors. Information on these factors can be found under the '*John dory (JDO 2) Options*' section above, and also under '*Who is affected by the proposed changes?*'. In general, the TACC reduction under Options 2 or 3 would have a negative financial effect on those involved in the commercial fishery, with disproportionate impacts on individual permit holders who are currently fully or close to fully utilising their JDO 2 ACE. However, in the long-term the commercial fishery and its stakeholders would also benefit from a higher biomass level if the stock is enabled to increase as a result of the TACC reduction. None of the TAC options are expected to negatively impact customary and recreational fishers, given the allowances would provide for existing low levels of harvest, and are proposed to be set at the same level under all options.

Harvest Strategy Standard

64. For the northern part of SNA 2 (SNA 2N), there is limited relevance in the context of reference points specified under the Harvest Strategy Standard because a B_{MSY}-compatible proxy target has not been determined. However, the Plenary concluded, based on the large increase in the accepted index of abundance, that the stock is Very Unlikely (<10%) to be below the soft limit.

65. The southern part of SNA 2 (SNA 2S), SPO 2, and JDO 2 all have B_{MSY}-compatible proxy targets. As noted above, SNA 2S and SPO 2 are assessed to be above these targets, and they are both very unlikely (<10% probability) to be below the default soft or hard limits specified under the HSS (see Figure 2 for visual reference). JDO 2 was last assessed (based on CPUE data up to 2022) as unlikely (<40% probability) to be above its interim B_{MSY} proxy targe, but unlikely (<40% probability) to be below the soft limit, and very unlikely (<10% probability) to be below the hard limit (Figure 2) (Fisheries Assessment Plenary, May 2024). As highlighted above there is uncertainty surrounding this status for JDO 2 as it was last assessed prior to impacts of Cyclone Gabrielle.

Mātaitai reserves and other customary management tools

66. When making TAC decisions, the Minister must allow for Māori customary non-commercial interests. In doing so, the Minister must take into account any gazetted mātaitai reserve in SNA 2, SPO 2, and JDO 2, and any area closure, fishing method restriction, or prohibition imposed in SNA 2, SPO 2, and JDO 2 under section 186A or 186B. The mātaitai reserves, area closures, fishing method restrictions, and prohibitions that apply to these stocks are listed in the table below.

67. It is not anticipated that the proposed TAC increases for SNA 2 and SPO 2 would negatively impact the availability of these species in these areas, given their increasing abundance and the distribution of commercial fishing effort outside of these areas.

68. For more information on how mātaitai reserves and other customary management tools are relevant for TAC decisions, see heading 2.7 in the Legal Appendix.

Mātaitai reserves and other customary management tools		
Management type	**FMA 2: East Cape, Gisborne, Wairarapa, east coast of Wellington** 	**FMA 8: Taranaki, west coast of Wellington** 
Mātaitai reserves Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.	Te Kopa o Rongokānapa Mātaitai Hakihea Mātaitai Horokaka Mātaitai Toka Tamure Mātaitai Te Hoe Mātaitai Moremore Mātaitai (a) & (b)	Marokopa Mātaitai
Taiāpure All types of fishing are permitted within a taiāpure. The management committee can recommend regulations to manage commercial, recreational, and customary fishing.	Porangahau Taiāpure Palliser Bay Taiāpure	N/A
Temporary closures Section 186A temporary closures are used to restrict or prohibit fishing of any species of fish, aquatic life or seaweed or the use of any fishing method.	Tangoiro/Waihirere closure - shellfish or fin fish Motuoroi closure area - shellfish or fin fish Moremore Temporary Closure – all fisheries resources Waimārama Temporary Closure - blackfoot pāua	Western Taranaki - shellfish (except rock lobster), conger eels, seaweed (excluding beach cast seaweed) and anemones

Key matters for assessment of the proposals against section 9 of the Act

69. When considering sustainability measures, the Minister must take into account the below environmental principles. For more information on how section 9 of the Act relates to TAC decisions, see heading 1.4. of the Legal Appendix.

70. The proposals to increase the TAC for SNA 2 and SPO 2 may result in additional fishing effort in the GUR 2, SNA 2 and SPO 2 target fisheries and as a result may increase interactions with protected species.

71. FNZ considers that Options 2 and 3 for SPO 2 may result in an increase in fishing effort (mainly set net effort targeting rig and/or school shark) and therefore an increase in protected species interactions.

72. FNZ considers that Option 2 for SNA 2 may result in a small increase in fishing effort and Option 3 could result in a larger increase in fishing effort. These increases may result in a proportional increase in protected species interactions. However, it should be noted that SNA 2 is predominantly taken as bycatch, and based on CPUE, abundance appears to be rapidly increasing (meaning higher quantities of snapper could potentially be caught without a big increase in effort). Thus, the magnitude of any increased risk to protected species from these options is likely to be small.

73. Potential effects on associated or dependent species, biological diversity of the aquatic environment, and potential habitats of particular significance are outlined in the table below. The information on associated or dependent species presented is largely based on fisher-reported data that may not have been independently verified, noting that over the last five fishing years average observer coverage for these stocks has been negligible (< 5%).[5] On-board cameras have been live on trawl vessels less than or equal to 32 metres in overall length fishing in the western part of JDO 2 since August 2023. On board cameras are scheduled to be rolled out on trawl vessels in the East Coast North Island later this year, and on setnet vessels in the East Coast North Island in early 2025. This should help to provide more certainty in the reported data for these stocks in the future.

Associated or dependent species should be maintained above a level that ensures their long-term viability - Section 9(a) of the Act	
Seabirds	**Mixed FMA 2 bottom trawl fishery (SNA 2, SPO 2 and JDO 2) + western portion of JDO 2 bottom trawl fishery** Over the past five fishing years (2018/19 - 2022/23) an average of 5 seabirds have been reported as caught annually by bottom trawl vessels that catch snapper, rig, and John dory in FMA 2 and an average of 1 seabird has been caught annually by bottom trawl vessels that catch John dory in FMA 8. Species reported caught were albatrosses (unidentified, Buller's and Pacific, white-capped and Chatham), petrels, prions or shearwaters (unidentified, black, common diving, grey and Antarctic petrel and Flesh-footed, sooty and Buller's shearwater) and a black-backed gull.[6] Management of seabird interactions in New Zealand commercial fisheries is guided by the National Plan of Action Seabirds, with mandatory mitigation measures under the Seabird Scaring Devices Circular and recommended measures under the Trawl Mitigation Standards. FNZ, DoC, and industry also work to ensure vessels have and follow a vessel-specific Protected Species Risk Management Plan (**PSRMP**). A PSRMP specifies measures that should be followed on board each vessel to reduce risk of incidental seabird captures. While there is no legal requirement that fishers have a PSRMP, more than 95% of full-time inshore trawl vessels have and follow one.[7] **Setnet fishery (SPO 2)** No seabird interactions have been reported in the FMA 2 rig set net fishery over the past five fishing years (2018/19 – 2022/23). There are no mandatory seabird mitigation measures in place for set net fishers. However, size of mesh, the maximum length of time the net can remain in the water (soak time), the maximum length of set net, and where set net use is prohibited or restricted are set out in the Fisheries (Commercial Fishing) Regulations 2001. Recommended seabird mitigation measures for set net vessels are set out in the Set Net Mitigation Standards and light mitigation measures relevant to set net vessels are set out in the Mitigation Standards to Reduce Light-Induced Vessel Strikes of Seabirds with new Zealand

[5] This coverage is calculated based on fishing events (individual tows, sets or shots) 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.

[6] The 2023 update to the risk assessment for New Zealand seabirds identified Southern Buller's albatross as the most at-risk seabird with respect to commercial fishing impacts, followed by four taxa in the high risk category: Salvin's albatross, New Zealand white-capped albatross, black petrel and Westland petrel.

[7] Department of Conservation Liaison Programme Annual Report, 2022-23 Fishing Year (In Press).

	Commercial Fishing Vessels. Set net vessels are also encouraged to have and follow a PSRMP. More than 70% of full-time set net vessels >7m in length have a PSRMP and follow one.[8] These vessels take most of the volume of rig caught in SPO 2 (>90%).
Mammals	**Mixed FMA 2 bottom trawl fishery (SNA 2, SPO 2 and JDO 2) + western portion of JDO 2 bottom trawl fishery** Over the past five fishing years (2018/19 – 2022/23) an average of 2 marine mammals have been reported as caught annually by bottom trawl vessels that catch snapper, rig, and John dory in FMA 2. Species that have been reported caught over this period are New Zealand fur seals, common dolphins and a spectacled porpoise. There have been no marine mammal interactions reported or observed in the western JDO 2 bottom trawl fishery (FMA 8) over the past five fishing years (2018/19 – 2022/23). The 2022 updated spatially explicit fisheries risk assessment for New Zealand marine mammal populations identified the three species most impacted by fishing as Maui dolphin, New Zealand fur seal and Hector's dolphin. In general, trawl fisheries have been assessed as posing a substantially lesser risk to dolphins than commercial set-net fisheries. The Hector's and Maui dolphin Threat Management Plan guides management approaches for addressing both non-fishing and fishing related impacts on Hector's and Maui dolphins. To date, with regard to bottom trawl fisheries that catch snapper, rig and/or John dory, there have been no reported interactions with Hector's or Maui dolphins in FMA 2 and 8. The risk to dolphins from trawling around the east and west coasts of the North Island is considered to be low (see Roberts and Webber 2023), and largely managed under the current trawl restrictions (see here for a summary of North Island fisheries measures). **Setnet fishery (SPO 2)** No marine mammal interactions have been reported or observed in the SPO 2 setnet fishery over the past five fishing years (2028/19 -2022/23). The risk to dolphins from set netting around the east coast of the North Island is considered low (see Roberts and Webber 2023) and largely managed under current set net restrictions and prohibitions.
Fish and invertebrate bycatch	**Mixed FMA 2 bottom trawl fishery (SNA 2, SPO 2 and JDO 2) + western portion of JDO 2 bottom trawl fishery** Protected fish species occasionally interact with bottom trawl fisheries that catch snapper, rig and John dory in FMA 2 and John dory in FMA 8. One white pointer shark and one smalltooth sand tiger shark has been reported by trawl fishers in FMA 2 and FMA 8 over the past five fishing years (2018/19 – 2022/23). White pointer sharks are classed as 'Threatened – Nationally Endangered' and smalltooth sand tiger sharks are classed as 'At Risk – Naturally Uncommon' under the New Zealand Threat Classification System. The management of protected fish interactions within New Zealand's commercial fisheries is guided by the NPOA Sharks (2013). Invertebrate species, including corals, sponges and bryozoans, are also occasionally taken as bycatch in bottom trawl fisheries that catch snapper, rig and John dory in FMA 2, but more so in FMA 8 (the western area of JDO 2). Fisher reported data over the past five fishing years (2018/19 -2022/23) indicates that an average of 10.1 kgs of invertebrate species (mainly corals, with smaller quantities of bryozoans and sponges) are caught annually by bottom trawl vessels that catch John dory in FMA 8 and an average of less than 1 kg is caught in FMA 2 by bottom trawl vessels that catch snapper, rig and John dory in FMA 2. **Setnet fishery (SPO 2)** Over the past five fishing years (2018/19 – 2022/23) one white pointer shark has been reported as caught by set net fishers in FMA 2.
Biological diversity of the environment should be maintained - Section 9(b) of the Act	
Snapper, rig, and John dory in FMA 2 are primarily caught in bottom trawl fisheries targeting tarakihi and gurnard. John dory is also caught in bottom trawl fisheries targeting snapper, tarakihi and gurnard in FMA 8 (although the majority of JDO 2 catch is from FMA 2).	

[8] Department of Conservation Liaison Programme Annual Report, 2022-23 Fishing Year (In Press).

Bottom trawling can damage the marine environment; particularly where trawling occurs on biogenic habitats. Research has characterised both New Zealand's benthic environment and the level of benthic impact from fisheries activity (MacGibbon & Mules 2023, AEBR 316).

In 2021, the gurnard and tarakihi target fisheries in FMA 2 had estimated trawl footprints of 1,676.8 km^2 and 2,546 km^2, respectively. These footprints equate to 5% and 8% of the total inshore trawl footprint and 39% and 60% of the total inshore FMA 2 trawl footprint for 2021, respectively.

SNA 2, JDO 2 and SPO 2 target fisheries have much smaller footprints of 71 km^2, 48.6 km^2 and 0 km^2, respectively, which all equate to less than 1 % of the total estimated inshore trawl footprint.

The trawl footprint in 2021 for gurnard, and snapper target fisheries in FMA 8 was estimated to be 1,017.3 km^2 and 256.7 km^2, respectively. There is no trawl footprint estimate for the tarakihi target fishery in FMA 8. These footprints equate to 3% and <1% of the total inshore trawl footprint and 17% and 4% of the combined FMA 8 and 9 inshore footprint for 2021, respectively.

Trawling in FMA 2 has been mostly confined to areas that have been consistently fished over time. There are also several areas within the shallower inshore waters in FMA 2 and 8 that are closed to trawling. Specifically, in FMA 2:

- Several areas within Hawkes Bay closed to both trawl and danish seine fishing.
- There is a prohibition of paired trawling along the North Island East Coast.
- The Cook Strait Cable Protection Zone prohibits most fishing methods in this area.

In FMA 8:

- There are trawl and set net restrictions along the North Island West Coast.
- Restricted areas around Taranaki, to protect petroleum installations, prohibits fishing in these areas.

There are also several marine reserves in both FMA's (covering approximately 9,000ha in total) that are closed to fishing and provide protection from benthic impact fishing methods.

FNZ considers that the TAC increases proposed for SNA 2 and SPO 2 are unlikely to significantly increase bottom trawl effort or the overall trawl footprint in FMA 2 because they reflect increased fish abundance and CPUE. However, FNZ will continue to monitor changes in these trawl footprints that occur as a result of any changes.

As noted above, snapper is a key demersal predator in northern New Zealand coastal marine ecosystems, and there is some risk that if SNA 2 is not managed at a level that maintains this function, it could result in flow on changes to biodiversity of the environment. This is discussed in more depth within the '*Interdependence of stocks'* section on Pages 13-14 above. The risk of negative impacts for biological diversity cannot be reliably quantified based on the limited information available. However, FNZ considers that biological diversity should be maintained under all the options proposed (which range up to a moderate 30% TAC increase), noting that snapper abundance is high and appears to have rapidly increased in recent years.

Habitat of particular significance for fisheries management should be protected - Section 9(c) of the Act

Patea Shoals, off the South Taranaki Bight, is considered a potential nursery and spawning ground for finfish, including John dory, and as noted above under '*Environmental conditions affecting the stocks',* the Wairoa Hard area has been identified as having important habitat for juveniles of snapper and other finfish in FMA 2. These and other habitats that may potentially be significant for SNA 2, SPO 2 and JDO 2 are discussed in the table below.

FNZ is aware of a project proposed for the upcoming year (led by Seafood NZ) which will aim to help confirm spawning grounds for snapper in SNA 2. The results of this may further inform habitats of particular significance for SNA 2 in the near future.

The proposals to increase the TAC for SNA 2 and SPO 2 may result in additional fishing effort in the GUR 2, SNA 2 and SPO 2 target fisheries (refer to the section above titled '*Finfish plan – stock complex management'*). However, FNZ considers that this additional fishing is unlikely to significantly impact the habitats of particular significance listed below as fishing is either restricted or generally does not occur in these areas. In addition, the risk to these habitats from increased fishing effort in SPO 2 would be low given it would mainly be an increase to set net effort targeting rig and/or school shark, which is not a bottom contacting method. The magnitude of risk from increased fishing effort in SNA 2 would also be low as snapper is currently predominantly taken as bycatch and abundance has increased rapidly meaning higher quantities of snapper could potentially be taken without a big increase to effort. However, FNZ will continue to monitor changes in these fisheries (including impacts on Habitats of particular significance) that occur as a result of this review.

Potential habitat of particular significance for fisheries management					
Potential habitat of particular significance	Attributes of habitat	Reasons for particular significance	Risks/Threats	Existing protection measures	Evidence
Wairoa Hard – Hawkes Bay	Nearshore mixed habitat comprising coarse sediments, occasional patches of cobbles and rocky outcrops and extensive areas of kelp	Important nursery ground for a variety of pelagic and benthic fish species, including snapper. Potentially important spawning ground for some fish species including snapper and John dory. Recognised as an area with significant conservation value in the coastal ecosystem in 1995.	Climate change can induce extreme weather events (such as Cyclone Gabrielle), destroying or modifying inshore biogenic habitats. Mobile bottom-contact fishing methods, such as bottom trawling, can impact biogenic habitats and may account for the lack of any large, robust colonies at Patea Shoals. However, the frequency of disturbance in individual areas seems sufficiently low to maintain reasonable biodiversity and moderate colony sizes. Wairoa has been closed to the taking of finfish and recreational set netting since 1981 so impacts from mobile-bottom contact fishing methods are no longer considered a risk to this habitat. Inputs of pollutants and sediments from land-based sources: • High nutrient load can lead to eutrophication. • Sedimentation can smother biogenic habitats. Resuspension of sediments by bottom contact fishing or subtidal sand or mineral mining. Some habitat types, e.g. bryozoan thickets, are characterised by slow growth and can decades to recover. Those biogenic habitats that are susceptible to breakage and dislodgement are likely to be heavily impacted by ongoing fishing activities, with extensive areas already showing signs of damage and loss (e.g. bryozoan thickets off Patea Shoals). Adverse effects from non-indigenous/invasive species such as the Asian date mussel.	Several areas within the shallower inshore waters are closed to specific fishing methods, including the Wairoa Hard, and may provide some protection to potential nursery habitat. Specifically in FMA 2: • Several areas within Hawkes Bay closed to both trawl and danish seine fishing. • Prohibition of paired trawling along the North Island East Coast. • Prohibition of danish seining around the lower North Island. • Cook Strait Cable Protection Zone prohibits most fishing methods in this area. In FMA 8: • Trawl and set net restrictions along the North Island West Coast. • Prohibition of danish seining around the lower North Island. • Restricted areas around Taranaki, to protect petroleum installations, prohibits fishing in these areas. The National Policy Statement on Freshwater Management and the National Environmental Standards for Freshwater, which came into effect on 3 September 2020, should lead to improved water quality in shallow harbours and estuaries and other shallower inshore waters. The FNZ Coastal Planning Team engages with the RMA coastal planning processes to support marine management decisions to manage land-based impacts on habitat of particular significance for fisheries management.	Morrison et al. (2014) Fisheries New Zealand (2024) Hawkes Bay Regional Council (2020) Walsh et al. (2012)
Clive Hard – Hawkes Bay	Nearshore mixed habitat comprising gravel, small boulders, and kelp, surrounded by sandy mud and muddy substrates	Important nursery ground and potentially important spawning ground for some fish species, including snapper.			Haggitt and Wade (2016) Jones et al. (2016)
Pauatahanui Inlet, Porirua Harbour, Wellington Harbour and Poverty Bay	Shallow sand and mud flats with freshwater component	Nursery ground for rig			Morrison et al. (2014)
Bays along the Coast to Cape Turnagain and north of Kapiti Island	Not well defined	Potential nursey grounds for John dory.			Morrison et al. (2014) Dunn and Jones (2013)
Patea Shoals – South Taranaki Bight	Mixed biogenic habitat – rippled sands, sand-wave bed forms, low-lying rocky outcrops, wormfields, bivalve rubble and bryozoan rubble.	Supports diverse benthic and suspension feeding assemblages and is a known nursery ground for some finfish species. Patea shoals may also be a spawning ground for some finfish species, including John dory.			Morrison et al. (2014) Morrison et al. (2022) Beaumont, Anderson and MacDiarmid (2015) Anderson et al. (2019) Hurst et al. (2000)

Key matters for assessment of the proposals against section 11 of the Act

74. Section 11 of the Act sets out various matters that the Minister must take into account (sections 11(1) and 11(2A)) or have regard to (section 11(2)) when setting or varying sustainability measures such as the proposed TAC changes. The matters relevant to this review under section 11 are set out below. For more information on how section 11 is relevant for TAC decisions, see heading 2.2 in the Legal Appendix.

	SNA 2 (snapper)	SPO 2 (rig)	JDO 2 (John dory)
Effects of fishing on any stock and the aquatic environment – section 11(1)(a)	The effects of fishing on other stocks and the aquatic environment are discussed throughout this paper. In particular see '*Finfish Plan – Stock complex management'* above on Page 3, '*Interdependence of stocks*' on Page 13 and '*Key matters for assessment of the proposals against section 9 of the Act*' from Page 19.		
Existing controls that apply to the stock or area – section 11(1)(b)	**Commercial:** Spatial gear restrictions (under Fisheries (Central Area Commercial Fishing) Regulations 1986): – Several areas within Hawkes Bay closed to both trawl and Danish seine fishing. – Prohibition of paired trawling along the North Island East Coast. – Prohibition of danish seining around the lower North Island. – Trawl and set net restrictions along the North Island West Coast (relevant for JDO 2).		
	Recreational: – Minimum legal size: 27 cm – Maximum daily limit per person: 10 snapper – Minimum net mesh size: 100 mm Commercial: – MLS of 25 cm fork length. – Minimum net mesh size of 100 mm	Recreational: – Combined daily limit per person: 20 fish including rig – Minimum net mesh size: 150 mm Commercial: – Minimum net mesh size of 150 mm	Recreational: – Combined daily limit per person: 20 fish including John dory – Minimum set net mesh size: 100 mm
The natural variability of the stock – section 11(1)(c)	As described above, snapper is a generally low productivity species, and accordingly they have a low level of natural variability. However, recruitment success can vary significantly, potentially in response to environmental conditions such as water temperature. Recent stock assessments indicate snapper may be in a higher period of productivity compared to historically. This aligns with the observed trends of CPUE within SNA 2, which suggest rapid increases in abundance in recent years (in both the northern and southern parts of SNA 2). However, as noted above, recruitment of fish into the southern part of SNA 2 may be lower in the next 4 to 5 years due to impacts of Cyclone Gabrielle in shallow areas which provide habitat for juvenile snapper.	Rig are generally considered to have low fecundity and a low level of natural variability. Like other sharks, this can make rig susceptible to overfishing. Should fishing mortality in SPO 2 exceed the *MSY* threshold, this could lead to depletion. This must be considered when setting the TAC and TACC. SPO 2 is above target and abundance appears to be increasing (based on CPUE) while the exploitation rate is decreasing. As with SNA 2, recruitment could be lower in the next several years due to impacts of Cyclone Gabrielle in shallow areas which provide habitat for juvenile rig (though these impacts are uncertain).	- John dory are a higher productivity stock with higher natural variability compared to snapper and rig. The southeast part of the stock is below target, but abundance appears to be increasing under current catch levels. The TACC in JDO 2 has never been fully caught, average catch over last decade has been 46% of current TACC. - Recruitment in the southeast part of JDO 2 may be lower in the next few years due to impacts of Cyclone Gabrielle in shallow areas which provide habitat for juvenile John dory (though these impacts are uncertain).

Relevant statements, plans, strategies, provisions, and documents - section 11(2)	There are four regional councils and one unitary authority that have coastlines within the boundaries of FMA 2 (which covers all three stocks): Greater Wellington, Manawatu-Wanganui, Hawke's Bay, Gisborne, and Bay of Plenty. There are three regional councils have coastlines within the boundaries of FMA 8 (relevant to part of JDO 2): Waikato, Taranaki, and Greater Wellington. Each of these regions have policy statements and plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats. The provisions of these various documents are, for the most part, of a general nature and focus mostly on land-based stressors on the marine environment. There are no provisions specific to these stocks. FNZ has reviewed the documents and the provisions that might be considered relevant. A summary of these can be found on our website here. FNZ considers the options in this paper are all consistent with the objectives of these relevant plans.
Relevant services or fisheries plans – section 11(2A)	National Inshore Finfish Fisheries Plan: The National Inshore Finfish Plan is relevant to management of snapper, rig and John dory. All three stocks are in Group 2 of the plan, which recognises the need to manage the stocks to provide for moderate levels of use with moderate levels of information to monitor stock status (e.g. partial quantitative assessments). FNZ considers that the options proposed for all three stocks are consistent with this.
Other plans and strategies	Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy) FNZ considers that the changes proposed for SNA 2, SPO 2 and JDO 2 are generally consistent with this strategy – including Objective 10, which is to ensure that ecosystems are protected, restored, resilient and connected from mountain tops to ocean depths, and Objective 12, which is to manage natural resources sustainably. NPOA sharks (SPO 2) FNZ considers the options proposed for SPO 2 are consistent with this plan, including Objective 1.4. which specifies that mortality of sharks from fishing should be at or below a level that allows for the maintenance at, or recovery to, a favourable stock status.

Information principles: section 10 of the Act

75. The best available information relevant to this review of SNA 2, SPO 2 and JDO 2 is presented throughout this paper, and uncertainties in the information have been highlighted where relevant. The table below provides an additional summary of the best available information and key areas of uncertainty, unreliability, or inadequacy in information. As per section 10(c) of the Act, caution is required in decision making where information is uncertain, unreliable, or inadequate. However, as per section 10(d) of the Act, the absence of, or any uncertainty in, any information must also not be used as a reason for postponing or failing to make a decision.

76. For more information on how section 10 is relevant for TAC decisions, see heading 1.5 in the Legal Appendix.

Stock	Best available information	Key areas of uncertainty, unreliability or inadequacy
SNA 2 Snapper 	2024 Partial Quantitative Stock Assessment using standardised CPUE. • SNA 2S Very Likely (> 90%) to be at or above the target and unknown if overfishing is occurring. Standardised CPUE index increased six-fold between 2016 to 2023 while relative exploitation rate declined between 2018 to 2023. • SNA 2N status in relation to the target is unknown but Unlikely (<40%) to be below the soft limit and Very Unlikely (<10%) to be below the hard limit. Standardised CPUE index trebled between 2016 to 2023 while relative exploitation rate declined between 2012 to 2023.	The total level of biomass cannot be reliably estimated – only partially quantitative information is available (standardised CPUE), and this information does not provide the ability to accurately project the level of biomass relative to *MSY* following TAC changes. There are no reference points for the northern part of SNA 2 (SNA 2N) due to uncertainties in the stock relationships/boundaries with SNA 1 Bay of Plenty sub-stock (biological stock boundaries are uncertain). There is limited post-cyclone CPUE data analysis. It is expected that juvenile snapper would have been negatively impacted by Cyclone Gabrielle (due to sedimentation impacts in

Stock	Best available information	Key areas of uncertainty, unreliability or inadequacy
	Oosting (2021) showed that East Cape/Gisborne snapper fall under a Northern genetic cluster, encompassing Northland, Hauraki Gulf and Bay of Plenty. Hawke's Bay snapper fall under a Southern genetic cluster, encompassing Karamea Bight, Tasman Bay, Kapiti Coast and West Coast North Island. Genetic disconnection, combined with some mixing, between the clusters was detected around the Mahia peninsula and Cape Reinga.	Wairoa Hard). The extent of impact is uncertain, and it is unknown how long-term recruitment in SNA 2 may be affected. There is little information to inform the extent to which the proposed TAC increases might impact other species associated with snapper (e.g. kina).
SPO 2 Rig 	2024 Partial Quantitative Stock Assessment using standardised event level CPUE. Very Likely (>90% probability) to be at or above its management target, Overfishing is Unlikely (< 40%) to be occurring. CPUE stable/increasing, while slight reduction in exploitation rate.	The total level of biomass is not known – status is based on partially quantitative information (standardised CPUE), and this information does not provide the ability to accurately project the level of biomass relative to *MSY* following TAC changes. The extent of cyclone impacts on shallow inshore birthing sites is uncertain, and there is little information to inform the extent to which the proposed TAC increases might impact other species associated with rig.
JDO 2 John dory 	2023 Partial Quantitative Stock Assessment using standardised CPUE that concluded the southeast North Island portion of the stock was Unlikely (< 40%) to be at or above the target, Overfishing Unlikely (< 40%) to be occurring.	The total level of biomass cannot be reliably estimated – only partially quantitative information is available (standardised CPUE), and this information does not provide the ability to accurately project the level of biomass relative to *MSY* following TAC changes. The impact of Cyclone Gabrielle on John dory habitat is uncertain, therefore, there is uncertainty how the stock and its supporting habitat may have been affected by the cyclones.
All stocks (SNA 2, SPO 2 & JDO 2)	The best available information regarding potential impacts from Cyclone Gabrielle on these stocks is summarised above under *'Environmental conditions affecting the stocks'*. As highlighted in that section, the effects of sedimentation appeared to vary significantly by area and it is highly uncertain what specific impacts there may have been for these stocks. Wairoa Hard, which is known to be a nursery ground for snapper, was likely to be disproportionately affected by sedimentation impacts. The extent of impact is not known and flow on effects for stock recruitment will not be fully apparent for another 4-5 years.	Recruitment and habitat effects from the cyclone are unknown for all three stocks. It is also unknown what impacts the cyclone may have had on other species, which could lead to flow on effects on SNA 2, SPO 2 or JDO 2 (due to changes in trophic interactions).

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