



Commercial Landing Exception Review: Red Cod

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Red cod (RCO) – all quota management areas

Pseudophycis bachus, red cod, hoka

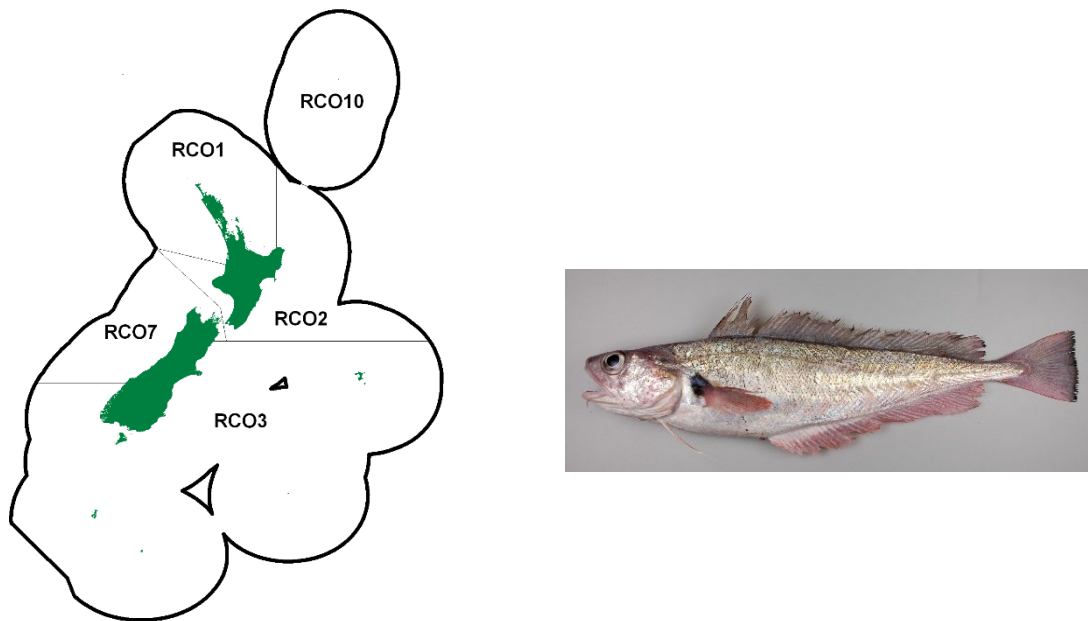


Figure 1. Quota Management Areas (QMAs) for red cod (RCO).

1 Purpose

1. Fisheries New Zealand is reviewing the mandatory return of all red cod smaller than the minimum legal size (**MLS**) to the sea, against the new exception rules and provisions that have been set in the *Fisheries Act 1996* (**the Act**).
2. Fisheries New Zealand welcomes feedback and submissions on this review, including the purpose of the current mandatory return, your understanding of survivability for red cod in different conditions, and specific handling practices that support the safe return of red cod.

2 Summary

3. The 2022 amendments to the Act aim to strengthen and modernise New Zealand's fisheries management system by encouraging better commercial fishing practices. Under the Act, all Quota Management System (**QMS**) species caught by commercial fishers must be landed, unless the Minister for Oceans and Fisheries (**the Minister**) provides an exception to this requirement. The Minister must be satisfied that any exception to the requirement to land all QMS species must meet at least one of the three new provisions that have been set out in the Act (**the exception provisions**). There are over 20 species with exceptions that, under the 2022 amendments to the Act, are required to be reviewed by September 2026. The reviews will assess whether existing exceptions meet the new exception provisions and can continue, or whether they need to be amended or removed. If an exception is to continue it will be provided for in the new Fisheries (Landing and Discard Exceptions) Notice.
4. These exception reviews are being staged over the next three years to help fishers adapt to any changes, and the first species being reviewed is red cod. There is an exception for red cod, which is that commercial fishers must return red cod that are under the MLS of 25 cm in total length (**TL**), whether they are alive or dead. Under the 2022 amendments to the Act, the regulation that provides for this exception must be revoked by 30 September 2026.

5. A commercial MLS and mandatory return of sub-MLS red cod may be allowed for if the Minister is satisfied that the return is for a biological, fisheries management or an ecosystem purpose and the returned fish have an acceptable likelihood of survival. If the exception is allowed, it must be provided for under the new requirements in section 72A of the Act.
6. Based on its initial analysis, Fisheries New Zealand considers that the current MLS exception does not meet the new exception provision and should be revoked. The returns do not meet the purposes under the exception provision and the likelihood of survival of returned red cod is considered low given the high likelihood of trauma during the catch process from the bulk harvest and netting methods that represent over 90% of the commercial harvest of red cod.
7. Fisheries New Zealand does not consider the removal of this exception requires a review of sustainability measures (i.e., catch limits and deemed values) to ensure the associated mortality is accounted for within the fisheries management system. The associated mortality (given volumes of reported returns) is small relative to the existing Total Allowable Commercial Catch (**TACC**) and can be provided for within the existing allowances, which means there should be available annual catch entitlement (**ACE**) to balance catch.

3 Engagement to date

8. Fisheries New Zealand held discussions with operating Iwi Fisheries Forums, Te Ohu Kaimoana and representatives from industry, some commercial fishers, recreational and environmental organisations on the review within the context of the broader implementation programme of the new landing and discard rules in late 2022.
9. In advance of this consultation, Fisheries New Zealand also sent out a summary of the review of the commercial MLS for red cod to all operating Iwi Fisheries Forums. In March 2023, the proposal was discussed at Forum hui when tabled as an agenda item. Fisheries New Zealand did not receive any specific feedback on the proposal.
10. The below analysis captures specific comments and concerns raised regarding the survivability of red cod and the potential socioeconomic, cultural, and environmental impacts of changes to the landing and discard rules for red cod or more generally.
11. Tangata whenua and stakeholders are invited to comment further on these proposals. Any additional information on whether there are certain conditions or requirements (e.g., fishing methods, fishing depths, handling practice) that could be applied to an exception for red cod to improve the likelihood of survival of red cod is welcomed.

4 Legal Framework

12. As per regulation 31(6) of the Fisheries (Commercial Fishing) Regulations 2001, commercial fishers currently must return red cod that are less than 25 cm TL to the sea. This exception is being reviewed in accordance with Fisheries New Zealand's draft exception review schedule, which is staging the reviews of existing exceptions over a four-year implementation period. The regulation for red cod must be revoked by 30 September 2026, or an earlier date set by regulations.
13. The only way to allow for an exception that requires the commercial return of sub-MLS red cod is to provide for it under section 72(2) of the Act. This requires the Minister to be satisfied the return meets the new exception provision for mandatory returns under section 72A(2)(c) of the Act (see paragraph 14(c) below).
14. Under section 72A, the Minister may require or permit fish or other animal that is aquatic life to be returned or abandoned and may make instruments for the purposes of section 72(2) or 72(3). An instrument made under section 72A(2) may:
 - a. permit a stock or species to be returned to or abandoned in the sea or other waters from which it was taken if the Minister is satisfied that the stock or species has an acceptable likelihood of survival if returned or abandoned in the manner specified by the instrument, or

- b. permit a stock or species to be returned to or abandoned in the sea or other waters from which it was taken if the Minister is satisfied that the stock or species—
 - i. would damage other stocks or species taken by the commercial fisher if retained (for example, an ammoniating species), or
 - ii. is damaged as a result of unavoidable circumstances (for example, diseased or predated fish), or
- c. require a stock or species to be returned to or abandoned in the sea or other waters from which it was taken if the Minister is satisfied that the return or abandonment is for a biological, a fisheries management, or an ecosystem purpose and the stock or species has an acceptable likelihood of survival if returned or abandoned in the manner specified by the instrument.

5 Red cod

5.1 Species and fishery information

Biology

15. Red cod is a fast-growing, short-lived species (living an average of 3–4 years, with an estimated maximum age of six years). Red cod distribution ranges from the Three Kings Islands to south of the Sub-Antarctic Islands, with the highest concentration around the Canterbury Bight.
16. Red cod grow to about 25 cm TL in the first year, followed by annual growth increments of 5–15 cm. Growth of sexes is similar for the first two years, after which females tend to grow faster than males and reach a larger overall length. Size at sexual maturity ranges from 45 to 55 cm TL, with a mean TL of 52 cm for both sexes at an age of 2–3 years.
17. Red cod are seasonally abundant, with schools moving inshore from November to June, before moving into deeper water to spawn (Beentjes and Renwick, 2000). Juvenile red cod appear in offshore waters after the spawning period; however, no nursery grounds are known for this species. Schools generally comprise single age cohorts rather than a mix of age classes.
18. Red cod musculature has little connective tissue, resulting in soft, easily damaged flesh. Red cod also tend to shed scales with little provocation. Red cod also have swim bladders and when caught at depth can suffer from barotrauma.¹ Accordingly, red cod are easily injured, affecting their survivability.

Commercial Fisheries

19. Red cod comprises five QMS stocks: RCO 1 (Auckland), RCO 2 (Central), RCO 3 (East coast South Island, Chatham's, Southland & Subantarctic), RCO 7 (Challenger) and RCO 10 (Kermadec). The QMAs reflect geographical boundaries and commercial fishing patterns, rather than biologically distinct stocks, as the number or extent of red cod biological stocks is unknown. There is limited information about stock structure, recruitment patterns, or other biological characteristics that would indicate biological stock boundaries.
20. Red cod abundance is highly variable and, as such, is included on Schedule 2 of the Act, which allows for within season adjustments to the TACC. In recent years national landings have been low (see Table 1 and Appendix 1). No landings of red cod have ever been recorded for RCO 10 (Kermadec) while modest annual landings, generally less than 10 tonnes, are recorded for RCO 1 (Auckland).

¹Barotrauma is the physical damage to body tissues caused by a difference in pressure. Fish in deepwater are under increased pressure and as the fish is drawn to the surface the pressure decreases. As the pressure decreases, any air within the fish expands causing damage to tissue and organs.

Table 1: Commercial red cod landings for each fish stock in the last three complete October fishing years (greenweight, rounded to the nearest tonne).

October Fishing Year	RCO 1	RCO 2	RCO 3	RCO 7	Total
2019-2020	5	30	1557	758	2350
2020-2021	11	30	1963	911	2915
2021-2022	12	30	2435	253	2730

21. The red cod fishery is seasonal, with peak catches around January to May when schools have moved inshore. Population size is also highly variable, with large annual fluctuations in catch thought to be driven by a combination of variable recruitment and short life spans. Trawl surveys and catch sampling of red cod have shown that the fishery is based almost exclusively on two- and three-year-old fish and is highly dependent on recruitment success.
22. The largest red cod fishery is RCO 3 in central South Island's southeast coast, where red cod is often caught in the local barracouta, red gurnard and tarakihi target fisheries. Commercial catch in this fishery (and RCO 7) has been well below the TACC over the past five years, with some evidence that red cod distribution is shifting southwards away from the main fishing grounds off the east coast of the South Island (in Pegasus Bay and the Canterbury Bight) in response to recent warmer sea temperatures. Fisheries New Zealand is analysing data from two recent trawl surveys along the East and West Coasts of the South Island to inform a potential review of the TACs for RCO 3 and RCO 7 and other red cod stocks in 2024.
23. Commercial fishers must return sub-MLS red cod to the sea, whether alive or dead, and report an estimated weight of that return against disposal code 'Y' in their fish catch report. Fish reported under disposal code 'Y' are not required to be recorded on a fisher's Monthly Harvest Return and, therefore, are not required to be balanced with ACE nor incur any deemed values. To date sub-MLS red cod returns have been reported at small volumes across RCO 1, 2, 3, and 7 (Table 2).

Table 2: Annual total returns to the sea of sub-MLS red cod reported under disposal code 'Y' (estimated greenweight, rounded to the nearest hundredth of a tonne).

October fishing year	RCO 1	RCO 2	RCO 3	RCO 7	Total
2019-2020	0.05	0.05	5.94	2.72	8.76
2020-2021	0.09	0.09	15.97	4.17	20.32
2021-2022	0.05	0.05	6.90	0.62	7.62

24. Red cod are mostly caught by bottom trawl, with smaller amounts caught by bottom longline, mid-water trawl, Danish seine and potting (Table 3). Red cod are often caught in:
 - a. bottom trawl target fisheries for barracouta, flatfish, squid, stargazer, red gurnard, and tarakihi, and
 - b. set net target fisheries for ling, school shark, spiny dogfish, rig, tarakihi, and moki.

Table 3: Average percentage of red cod catch by different fishing methods in each QMA (the three-year average for the 2019–2020 to 2021–2022 October fishing years). Only methods accounting for >1% of catch are shown.

Fishing method	Average catch (%) in each fish stock			
	RCO 1	RCO 2	RCO 3	RCO 7
Bottom Trawl	88	88.4	87.7	99.6
Precision Bottom Trawl	11	4.6	-	-
Midwater Trawl	-	-	3.4	-
Danish Seine	-	-	2.8	-
Set Net	-	3.3	-	-
Rock Lobster Pot	-	1.8	-	-
Bottom Longline	-	-	3.6	-

Māori customary interests

25. Hoka (red cod) is listed as a taonga species in the Te Waipounamu Iwi Forum Fisheries Plan and has been identified as common in many middens in the South Island. Red cod are important to many Māori customary interests as a source of food. There are no quantitative estimates of the current level of Māori customary non-commercial catch available (Fisheries New Zealand 2022).

Recreational interests

26. Red cod is not particularly prized by recreational fishers with a national estimated catch of 32 tonnes given in the National Panel Survey of Marine Recreational Fishers 2017-18 (Wynne-Jones et al 2019). For comparison, over 4000 tonnes of snapper are caught by recreational fishers each year. Over half (19 tonnes) of the national recreational red cod catch is attributed to RCO 2. Red cod are also locally important to recreational fishers, especially surf casters, in the Canterbury Bight and around Banks Peninsula (known locally as “Akaroa cod”). Recreational fishers have the same MLS for red cod as commercial fishers. There is currently no proposal to remove the recreational MLS.

6 Assessment against section 72A(2)(c) of the Act

27. The Minister may require red cod to be returned to or abandoned in the sea if they are satisfied that the return or abandonment is for a biological, fisheries management, or ecosystem purpose and the stock or species has an acceptable likelihood of survival if returned or abandoned in the manner specified by the instrument.

6.1 Biological purpose for a return

28. A biological purpose is a purpose that supports survival and reproductive capability of the stock or species. The biological purpose of an MLS is generally to allow a stock or species to breed at least once before they are harvested from the sea.
29. The red cod fishery is a strongly recruitment-driven fishery, with only a few year classes in the fishery.² Red cod achieve sexual maturity at 45–55 cm TL. An exception requiring the return of red cod smaller than 25 cm TL does not reflect the size at reproductive maturity and is, therefore, unlikely to fulfil this biological purpose. To allow red cod to breed at least once before they are harvested would require the MLS to be set much higher, for example at the mean size of 52 cm TL.
30. Any MLS set for the biological purpose of supporting red cod productivity would require a reasonable proportion of the fish to survive upon being returned, reach maturity and spawn.

6.2 Fisheries management purpose for a return

31. A fisheries management purpose is a rule or a setting that supports the purpose and principles of the Act.

Ensuring sustainability

32. Fisheries New Zealand notes that a fisheries management purpose (e.g., ensuring sustainability) may be given effect to under a biological purpose to support reproduction and productivity of the species or stock. The current MLS for red cod is inconsistent with this purpose, as discussed above.

Utilisation purposes

33. For utilisation purposes, an MLS can reflect a minimum economic size (**MES**): the size at which a fish is big enough to be worth landing economically. Anecdotal information suggests the MLS of 25 cm may have related to ‘the size of a dinner plate’ when first introduced in the 1930s. Small red cod currently have a low economic value and the requirement for commercial fishers

² A year class refers to the young fish that are produced by a population in a specific year.

to return sub-MLS red cod helps them to maximise the economics of their operations by, for example:

- a. reducing costs associated with ACE or deemed values for landing smaller fish,
 - b. enabling storage capacity on a vessel to be used for fish that provide the greatest value to fishers.
34. Differentials in port price indicate a lower price is paid to fishers for red cod less than 45 cm in TL. Requiring the return of red cod below an MES can support utilisation by reducing processing and harvesting costs that would be associated with landing smaller fish and help meet the market demands for larger individuals.
 35. The current MLS of 25 cm appears to be set well below the 45 cm that would best fit with a current MES. Economic factors can be fluid and the optimal MES is likely to vary regionally or over time as market demands change, which seems counter to creating a mandatory return. The use of an MES also does not require returned fish to survive.
 36. An MLS can also be used as an allocative tool, providing different access to the harvest of a species for different sector groups. For red cod, the same MLS applies to both commercial and recreational groups. Maintaining the MLS for commercial fishers may be viewed as providing equity between the sectors but fails to recognise the differences in how it is harvested and the likelihood of survival when returned to sea. There is little rationale to support the use of the current MLS for fisheries management as an allocative tool.

Cultural factors

37. Consideration of a fisheries management purpose should be made in light of the Act's obligations under the *Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act)* and the Deed of Settlement. The Minister is required to develop policies that protect and provide for Māori to exercise their rangatiratanga (the right to exercise authority) in respect of traditional fisheries, including having regard to kaitiakitanga (guardianship and protection).
38. Fisheries New Zealand acknowledges the views raised previously from Te Ohu Kaimoana, individuals from the Iwi Fisheries Forums, Te Rūnanga o Ngāi Tahu, individual Māori commercial and customary fishers in the development of the Fisheries Amendment Bill and following enactment of the Fisheries Amendment Act on the overarching changes to the landing and discard rules. A range of views and perspectives have been heard, including that:
 - a. tikanga should provide for commercial fishers to return fish to the sea that are likely to survive and sub-MLS fish,
 - b. fish that will not be used when landed and could end up in landfill is contrary to tikanga,
 - c. fish caught are a gift from Tangaroa and should be fully used, and
 - d. where fish are returned matters, you can't just return fish anywhere if that is not where they came from.
39. Any further feedback specific to the return of red cod discussed here is welcomed.

6.3 Ecosystem purpose for a return

40. An ecosystem purpose can be considered the role and importance of a species in the ecosystem. For example, the ecological role of a species includes their position in the food web ("what it eats and what eats it"). The ecological importance of a species represents the consequences of changes in the abundance of that species, for example, whether a reduction in the species abundance will have significant negative consequences on another species or habitat (e.g., the role of keystone species).
41. Fisheries New Zealand considers an ecosystem purpose is a species' fundamental reason for being or functioning in a system (whose role may not be easily filled by another species). An ecosystem purpose is not considered, for example, how fish may opportunistically be used within the ecosystem following commercial capture and return of fish, particularly if they are unlikely to survive post release.

42. Red cod is found in the diet of several active predators, including protected species such as yellow-eyed penguins, New Zealand sea lions, New Zealand fur seals, dusky dolphins, Hector's dolphins and Australasian gannets, and fish species such as barracouta (Kemp et al 2012). Although red cod contributes to the diet of several species, its importance varies between species. For example, for yellow-eyed penguins, there has been a gradual decline in the importance of red cod as main prey species in some regions since the 1980's (Mattern and Ellenbert 2018), which may be due to reduction in red cod abundance. However, Fisheries New Zealand does not consider that mandatory returns of sub-MLS red cod provide an ecosystem purpose in relation to the natural diet of predator species given:
43. The volume of returns is low (relative to total removals provided for under the Total Allowable Catch) in most areas.
44. These food web relationships are unlikely to be supported through the return of red cod that are either dead or have a low likelihood of survival following the release.

Comments raised in pre-consultation

45. Some fishers and eNGOs have raised concerns about the potential impact of removing the commercial red cod MLS because of:
 - a. the contribution that small red cod returned to the sea provide to the diet of several seabird species, and
 - b. nutrient cycling of discarded red cod in the marine environment, including as an additional food source for benthic scavengers.
46. Several seabird species are known to forage around vessels as they discard fish to the sea and some fishers consider the requirement to return sub-MLS red cod provides an important food source. The importance of fish discards for seabirds in New Zealand is not well understood. Overseas studies have found that discarded fish may provide an important food source for some seabirds and benthic scavengers, but also may affect natural trophic interactions within an ecosystem (see Bicknell et al 2013, Depestele et al 2016, Karris et al 2018, and Kuepfer et al 2022). The impacts of removing discards are poorly understood and may equally come with some benefits. For example, reducing discards may reduce the bycatch of seabirds and other protected species.
47. Fisheries New Zealand does not consider returned sub-MLS red cod (dead or unlikely to survive) as a food source to be a natural role of red cod in the ecosystem. It is rather an opportunistic food source created by harvesting activity, which is unlikely to represent most of the diet of scavenging seabirds. Consequently, a mandatory return of small fish to support opportunistic foragers or benthic scavengers does not meet an ecosystem purpose.

6.4 Acceptable likelihood of survival

48. The Minister must also be satisfied that the stock or species has an acceptable likelihood of survival if returned to or abandoned in the sea in the manner specified. Fisheries New Zealand's working definition of "acceptable likelihood of survival" is *the expected result of a return is that the returned fish will continue to live, despite circumstances associated with the fishing event*".
49. Whilst there is little published information on red cod survival, its anatomy indicates a high likelihood of trauma, including barotrauma, during the catch process. As discussed in section 5.1, red cod have soft, easily damaged flesh and tend to shed scales with little provocation. Accordingly, red cod are easily injured upon capture when caught using bulk harvest methods such as trawl. In most cases red cod are either dead or unlikely to survive when returned to the sea.
50. While the degree of trauma will vary across methods and harvest conditions, anecdotal evidence from fishers corroborates that survival of small red cod, particularly when caught using bulk harvesting methods, is low. This view is also supported by Fisheries New Zealand observers, based on their experience across a range of vessels and method types.
51. Although red cod have a swim bladder and are therefore susceptible to barotrauma, the swim bladder is primitive, being connected to the mouth. As a result, red cod may not experience the

full extent of barotrauma. The survival of small red cod from bottom longline and potting capture is likely higher than set netting or trawling, but the comparative level of survival is not well known.

52. Capture by trawl, the primary catch method for this species, is inherently damaging to fish. Damage occurs from net entrapment, crushing, wounding, sustained swimming until exhaustion and changes in pressure (Suuronen 2005). All lead to stress, injury, and mortality of fish. This is especially so in smaller fish that are weaker and more sensitive to capture trauma from trawling. Due to soak time and gill damage, red cod survival from gill or set nets is also considered to be low.
53. There is little published evidence on post-release survival rates for red cod. An Australian study that examined post-capture survival in gillnet fisheries across a range of species noted red cod survival was significantly influenced by soak duration, with poor survival (<50%) in soak durations over three hours (Bell and Lyle 2016). Most set net soak times on the south east coast of New Zealand are overnight so 12 hours or more.

Overseas information

54. Most overseas studies on post-release survivability for cod species generally relate to Atlantic cod, which are a much hardier cod species in comparison to red cod. Therefore, post-release survivability estimates are not considered directly applicable.
55. A 2006 literature review noted previous studies that examined fishing mortality directly associated with catching and discarding of Atlantic cod caught by trawl methods in field experiments involving commercial fishing (Broadhurst et al 2006, Jean 1963). Mortality was estimated to be high and, in most cases, approached 100% depending on exposure and air temperature conditions. Small cod (<30 cm) had a lower level of survivability in general, which was further reduced with increased exposure on deck and higher air temperatures.
56. A study of discard mortality of Atlantic cod in the Gulf of Maine commercial lobster potting fishery estimated an at-vessel mortality of 9.3% and a model-based long-term discard mortality of 17.1%, for an overall discard mortality rate of 24.8% for a certain fishing depth and gear configuration (Sweezy 2020). The gear-specific nature of fishing mortality of Atlantic cod has also been demonstrated in other studies on handline (43%), pelagic longline (69%) and bottom longline (31-100%) fisheries (Milliken et al 1999, Milliken et al 2009, Pálsson et al 2003).
57. After a capture event, time on deck, air exposure and handling methods can have a significant effect on post-release survival. If injuries are incurred, upon return to the sea, infection and predation can also become factors against survival.

Initial view and upcoming information

58. Our initial view is that the likelihood of survival of red cod returned to the sea in general is low. This is particularly true for red cod caught using the bulk harvest and netting methods that represent over 90% of the commercial harvest of red cod.
59. Fisheries New Zealand has a research project underway ([INS2022-01](#)) to collate available scientific literature on the release mortality of inshore finfish and shark species, including red cod. This information will be discussed at a workshop of relevant experts (currently scheduled for June 2023) to estimate the release mortality according to gear type, handling behaviour, and environmental conditions. The information collated for red cod will be included in the advice to the Minister for decision-making.

6.5 Preliminary conclusion

60. Fisheries New Zealand considers that best available information demonstrates that the current requirement for commercial fishers to return red cod that are below an MLS of 25 cm TL to the sea does not serve a biological, fisheries management or ecosystem purpose. In addition, Fisheries New Zealand does not consider that red cod, particularly that caught by trawl, set net, and Danish seine, have an acceptable likelihood of survival.
61. Accordingly, subject to submissions, Fisheries New Zealand considers that the existing exception does not meet the new exception provision and proposes that an exception should

not be provided for the mandatory return of sub-MLS red cod in the Fisheries (Landing and Discard Exceptions) Notice.

7 Statutory considerations

7.1 Purpose of the Act

62. The Minister's decision whether to provide an exception or not must be made considering the purpose of the Act, as set out in section 8: "To provide for the utilisation of fisheries resources while ensuring sustainability".
63. Fisheries New Zealand considers a removal of the commercial MLS for red cod and requirement to land all red cod will result in added costs for some fishers that may not be economically viable, unless they are able to reduce their take of small red cod. In providing for the utilisation of a fisheries resource, enabling people to provide for their social, economic, and cultural wellbeing is a relevant consideration. It is up to the Minister to determine how much weight to give to wellbeing in making his overall decision.
64. The removal of the MLS is unlikely to impact the overall sustainability of red cod. As caught small red cod are likely dead or unlikely to survive, total removals from the fishery are unlikely to change whether these fish are returned to the sea or landed. It is possible catch of small red cod could increase should a lucrative market be developed; however, catch will be monitored and should any sustainability or ecosystem issues arise, alternative measures could be introduced. Conversely, fishers may take greater steps to avoid catching small red cod given the requirement to land and cover with ACE. This may improve the biomass of red cod.
65. Any changes to the commercial MLS for hoka (red cod) are unlikely to affect Māori customary or recreational access to this species given availability of fish is primarily managed by the setting of catch limits. Additionally, the returned red cod is likely dead or unlikely to survive so these fish do not become available to customary or recreational fishers for harvest.

7.2 International obligations

66. The Minister must act consistently with New Zealand's international obligations relating to fishing under section 5(a) of the Act. New Zealand is party to several international conventions including the Convention of Biological Diversity, the United Nations Convention on the Law of the Sea, and associated UN Fish Stocks Agreement. These conventions generally require application of a precautionary approach to fisheries management and maintaining a healthy marine ecosystem.
67. A precautionary approach means that decision-makers are more cautious where information is uncertain, unreliable, or inadequate. There is little information on the survivability of red cod when it is returned to the sea, and the Minister will need to consider the extent of available evidence to inform an acceptable likelihood of survival.
68. The Minister will also need to consider the purpose and function of the return of sub-MLS red cod in relation to a healthy marine ecosystem. As discussed above, Fisheries New Zealand does not consider the return of sub-MLS red cod meets an ecosystem purpose. Broader consideration of the environmental principles the Minister must take into account when making a decision are discussed below in section 7.4.

7.3 Treaty of Waitangi (Fisheries Claims) Settlement 1992

69. The Act must also be interpreted, and decisions made, in a manner consistent with the provisions of the Settlement Act. The Settlement Act is to be interpreted in a manner that gives best effect to the Deed of Settlement. Section 10 of the Settlement Act provides that non-commercial customary fishing rights continue to be subject to the Principles of the Treaty of Waitangi and give rise to Treaty obligations on the Crown. Section 10 also requires the Minister to consult and develop policies to help recognise for the use and management practices of tangata whenua in the exercise of non-commercial fishing.

70. The proposals in this paper do not impose restrictions on non-commercial customary fishing rights, which are authorised by kaitiaki. However, as noted in section 6.2, Fisheries New Zealand acknowledges the views raised by Māori previously, during the development and following the enactment of the *Fisheries Amendment Act 2022*. To date, no comments have been provided specific to the return of red cod. Any further feedback on this proposal is encouraged. Fisheries New Zealand welcomes further information on how tangata whenua wish to exercise kaitiakitanga in respect of red cod stocks in which they share rights and interests.

7.4 Environmental principles

71. Decision-makers, when making decisions in relation to the utilisation of fisheries resources or ensuring sustainability, must take into account that:
- associated or dependent species should be maintained above a level that ensures their long-term viability.
 - biological diversity of the aquatic environment should be maintained, and
 - habitat of particular significance for fisheries management should be protected.

Associated or dependent species

72. Associated or dependent species are defined in the Act as any non-harvested species taken or otherwise affected by the taking of a harvested species. Hector's dolphins and seabirds are examples of non-harvested associated or dependent species that should be maintained above a level that ensures their long-term viability.
73. In New Zealand, red cod is found in the diet of active predators, including protected seabird and cetacean³ species. These species actively hunt and capture red cod. As discussed in section 6.3, some fishers consider that small fish returned to the sea, alive or dead, provide an important food source for a variety of seabird species. Seabirds are attracted to and will feed on discarded fish around vessels. Some fishers consider removing the requirement to return sub-MLS red cod will affect this food source, and negatively affect these species.
74. Dependent on the purpose of a sub-MLS return, seabirds opportunistically feeding on returned red cod may directly negate that purpose (e.g., if the return is for a biological purpose to support species productivity). Fisheries New Zealand also notes that since most small red cod caught die or are unlikely to survive when caught by commercial fishers, they are no longer available as live prey for those species that actively forage and hunt for red cod. Conversely, removal of these returns means that this opportunistic food source will no longer be available to those species foraging around vessels.
75. Fisheries New Zealand considers providing prey to associated and dependent species is better addressed through the overall abundance of red cod in the sea, which is primarily managed through the setting of catch limits not through the return of sub-MLS red cod. The incentive created, by requiring small red cod that fishers may not want to be landed, is that they may be further encouraged to find ways to avoid catching them in the first instance.
76. Additionally, the attraction of seabirds and other protected species to vessels when fish are returned to the sea can result in their injury or death if there are interactions with fishing gear. Dependent on the scale and frequency of such interactions, this could impact on the long-term viability of an associated or dependent species. Reducing the volume and frequency of discarded red cod can reduce the risk of bycatch of protected species as they no longer associate vessels as a food source.
77. The intent of removing exceptions is to encourage better selectivity where possible (e.g., by avoiding spawning areas) so that, if the red cod MLS were removed, in this case fewer small red cod are caught in the first place. This would enable a greater volume of small live red cod to grow and reproduce and thereby support the food web dynamics in the ecosystem for those associated and dependent species that actively prey on this species.

³ Cetacean is an order of marine mammals comprising whales, dolphins, or porpoises.

Biological diversity

78. The Act defines “biological diversity” as the variability among living organisms, including diversity within species, between species and of ecosystems. When making a decision under the Act, the Minister must take into account that biological diversity of the aquatic environment should be maintained.
79. The removal of the MLS may result in fishers adjusting their practices to avoid catching sub-MLS red cod. This could result in an increase in genetic diversity among red cod, as a greater proportion of juveniles could reach reproductive maturity. Overall, we consider the estimated impact on genetic diversity of removal of the MLS is more likely to be positive over time.

Habitats of particular significance

80. Habitat of particular significance for fisheries management is not defined in the Act. Fisheries New Zealand recently consulted on draft guidelines for identification of habitats of particular significance for fisheries management. Alongside this, Fisheries New Zealand consulted on operational proposals to support the consideration of habitats of particular significance protection, when making fisheries management decisions. Fisheries New Zealand considers protect in this context means taking measures that would avoid, remedy, or mitigate the adverse effect of a decision that could undermine the function the habitat provides for the fisheries resource.
81. There are no specific habitats of particular significance for red cod identified at this time. What little that is known is provided in Table 4.

Table 4: Summary of information on potential habitats of particular significance to red cod.

Fish stock	RCO
Potential habitat of particular significance	No specific habitats of particular significance for red cod have been identified at this time. Information indicates that spawning in red cod varies with latitude, with spawning occurring later at higher latitudes. Spawning areas for red cod are unknown but it is thought that spawning occurs in deeper water (300-700m). Running ripe fish (fish close to spawning) were caught on the Puysegur Bank in 600 m during a Southland trawl survey. Catches in certain areas, such as the Waitaki canyon late in the season, are known to have high numbers of 1+ year class (smaller) fish. Juvenile: Juvenile red cod are found in offshore waters after the spawning period; however, no nursery grounds are known for this species
Attributes of habitat	Spawning is considered to occur in deeper waters, but little else is understood about the attributes of spawning habitat.
Reasons for particular significance	Successful spawning and development through juvenile stages is critical to supporting the productivity of the stock and ensuring juveniles recruit into the fishery.
Risks/Threats	As no habitats of particular significance have been identified for red cod, specific risks or threats to such habitats are unknown.
Existing protection measures	As no habitats of particular significance have been identified for red cod, it is unknown whether they are protected under current fisheries measures.

82. Irrespective of whether a habitat of particular significance for red cod has yet been identified, Fisheries New Zealand considers the proposed removal of the commercial MLS and requirement to land all red cod is unlikely to adversely affect or undermine the function of a habitat of particular significance that provides for a fisheries resource, such as red cod. The removal of the commercial MLS is unlikely to impact on where and how red cod are generally caught. However, commercial fishers may change their behaviour (where possible). They may develop innovative fishing methods or gear improvements, or more actively avoid areas where

spawning occurs or high densities of juvenile fish are found, to avoid catching small red cod that have little commercial value.

7.5 Information principles

83. Decision-makers, when making decisions in relation to the utilisation of fisheries resources or ensuring sustainability, must take into account the following information principles:
 - a. decisions should be based on the best available information,
 - b. they should consider any uncertainty in the information available in any case,
 - c. they should be cautious when information is uncertain, unreliable, or inadequate, and
 - d. the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.
84. The degree of uncertainty and the adequacy of the available information are matters for the Minister to assess and weigh in making decisions on whether to require or permit any QMS fish or other animal that is aquatic life to be returned or abandoned to the sea.
85. Information on the survivability of red cod here and in overseas fisheries is largely qualitative and anecdotal. While there are some post-release survivability studies available on other cod (gadoid) species there are limitations in their applicability to red cod the New Zealand context.
86. Based on the results of camera trials in the Canterbury Bight, which showed unreported discarding of other QMS species, Fisheries New Zealand considers the quantities of returns of sub-MLS red cod currently reported under disposal code 'Y' may be lower than actual quantities returned to the sea.⁴ This does not affect our assessment of survivability or the purpose for a return but may have implications for commercial fishers' operations and our estimates of overall catch in these stocks.

8 Fisheries Management implications

8.1 Sustainability measures

Total Allowable Catch

87. The Total Allowable Catch (**TAC**) is a limit on the total removals from the stock, comprising those taken by the commercial, recreational, and Māori customary non-commercial sectors, and all other mortality to a stock caused by fishing, including illegal removals.
88. Under the current sustainability measures, the return of sub-MLS red cod is not specifically accounted for in the allowances that have been set as these returns have been required whether the fish were alive or dead. If the MLS is intended to serve a biological purpose as discussed in section 6, fish returned should be alive and these returns would not be accounted for in the TAC, which is based on removals from a stock.
89. Given the low likelihood of survival of the bulk of commercially caught red cod that is returned to the sea, Fisheries New Zealand considers such returns (if provided for) should be reflected within the TAC allowances – either requiring fishers to balance this catch against ACE or within other sources of mortality from fishing.
90. Only RCO 2 and RCO 3 have allowances for all other mortality to a stock caused by fishing (Table 5). No TAC and allowances, other than the TACC, have been set for RCO 1, RCO 7, or RCO 10.

⁴ See information on Operation Hippocamp and Achilles for more details. <https://www.mpi.govt.nz/legal/legislation-standards-and-reviews/fisheries-legislation/independent-review-of-prosecution-decisions/>

Table 5: Allowance for other sources of mortality caused by fishing accounted for within the TAC and reported returns from the 2020-21 October fishing year.

	RCO 1	RCO 2	RCO 3	RCO 7	RCO 10
Other sources of mortality caused by fishing (tonnes)	N/A	25	230	N/A	N/A
Reported returns, Y (tonnes)	0.01	0.09	16	4.2	N/A

91. Reported returns (against disposal code Y for sub-MLS red cod) represent less than 1% of the reported landings for each of the red cod stocks in the last three years. The proposed removal of the MLS and requirement to land all red cod is not considered significant enough to warrant a review of the TAC and associated allowances at this time given the small volume of returns relative to the TACC and reported commercial catch.
92. All red cod stocks are listed in Schedule 2 of the Act. Schedule 2 allows the TAC of certain “highly variable” stocks, to be increased within a fishing season, leading to the creation of additional ‘in-season’ ACE. The base TACC is not changed by this process and the ‘in-season’ TAC reverts to the original level at the end of each season. Therefore, should catches indicate they might exceed the TACC in any given year, the TAC may be increased, if appropriate.
93. The proposed removal of the commercial MLS for red cod is unlikely to have any negative implications for non-commercial Māori customary or recreational fisheries, given the low likelihood of survival of most red cod that is commercially caught.

Deemed values

94. Deemed values are the price paid by fishers for each kilogram of unprocessed fish landed above a fisher’s ACE holdings. The purpose of the deemed values regime is to provide incentives for individual fishers to acquire or maintain sufficient ACE to cover catch taken over the course of the year, while allowing flexibility in the timing of balancing, promoting efficiency, and encouraging accurate catch reporting.
95. A removal of the commercial MLS may increase the value of ACE as demand may increase if fishers need to acquire more to account for an increase in landings of small red cod. However, given the level of reported returns and available ACE we consider any impact on ACE price is likely to be low.
96. Irrespective of this exception review, Fisheries New Zealand will continue to monitor changes in red cod abundance, catch, landings and ACE prices and undertake reviews of stock sustainability measures, including deemed values, where appropriate. As discussed in section 5, there is some evidence that red cod distribution is shifting southwards away from the main fishing grounds within RCO 3. Fisheries New Zealand is analysing data from two recent trawl surveys along the East and West Coasts of the South Island to inform a potential review of the TACs for RCO 3 and RCO 7 and other red cod stocks in 2024.

8.1 Reporting

97. The revocation of the commercial MLS would mean that the use of disposal code ‘Y’ would become invalid for red cod. Commercial fishers would be required to account for all red cod caught in their Monthly Harvest Return and cover that catch with additional ACE or pay deemed values.
98. However, Fisheries New Zealand considers that there may be some benefit in monitoring the overall proportion of small red cod in landings if the MLS is revoked. One option could be to require fishers to continue reporting small red cod under a new landing code that is recorded in their Monthly Harvest Return.

9 Questions for submitters

99. Fisheries New Zealand welcomes feedback on the assessment of red cod against the new exception provision. Please provide detailed information and sources to support your views where possible.

Purpose

- Do you agree with the characterisation of potential purposes of sub-MLS red cod returns?
- Are there other purposes of sub-MLS red cod returns?

Survivability

- Do you agree with the characterisation of post-release survivability of red cod?
- Do you have additional information on post-release survivability of red cod and the methods, conditions and practices that may improve survivability?

Impact

- How would a requirement to land all red cod affect your fishing practices and operation?
 - Would this change the profile of your catch?
 - What would be the primary challenges to your operations?
- What impact would landing all commercially caught red cod have on Māori to provide for their interests?
- What further information do you have that might inform the Minister's decision?

Monitoring

- If sub-MLS red cod cannot be returned to the sea, do you support continued reporting of red cod that are less than 25 cm TL but now landed?
 - Are there any operational impacts on commercial fishers of continuing to require this information? If so, what are those impacts?

10 How to get more information and have your say

100. Fisheries New Zealand invites you to make a submission on the proposal set out in this discussion document. Consultation closes at 5pm on 12 July 2023.
101. Please see the Fisheries New Zealand consultation webpage for related information and information on how to submit your feedback:
<https://www.mpi.govt.nz/consultations/commercial-landing-exception-review-red-cod>
102. If you cannot access to the webpage or require hard copies of documents or any other information, please email fisherieschangeprogramme@mpi.govt.nz.

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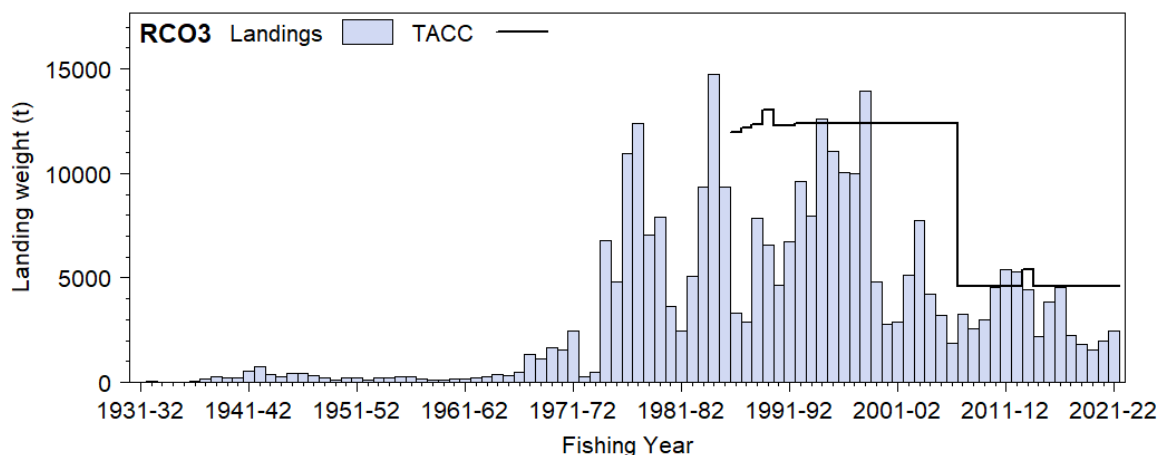
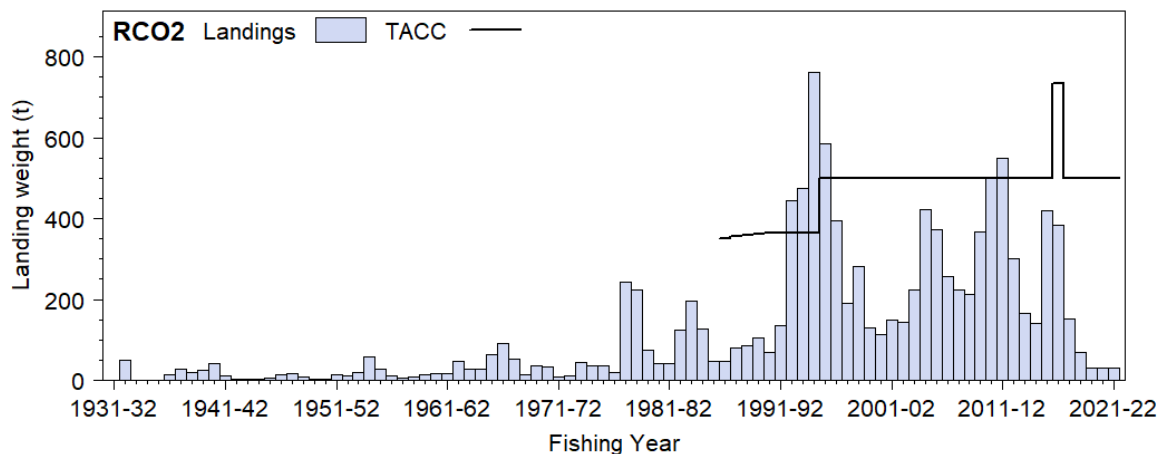
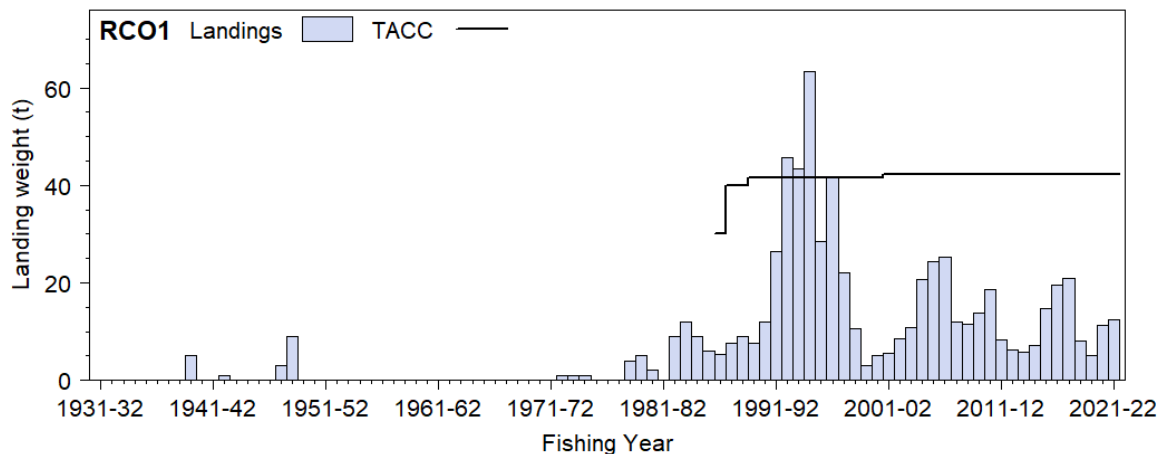
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12 Appendix 1. Reported commercial landings and TACC

Fisheries New Zealand regularly monitors changes in red cod abundance, catch, landings and ACE prices and will undertake reviews of stock sustainability measures, including deemed values, where appropriate. Landings of red cod have been well below the TACC for all stocks, particularly over the past five years (Figure A1). This possibly reflects a southward shift in red cod distribution (in response to recent warmer sea temperatures) away from the main fishing grounds. Fisheries New Zealand is analysing data from recent trawl surveys along the East and West Coasts of the South Island to inform a potential review of the TACs for RCO stocks in 2024.



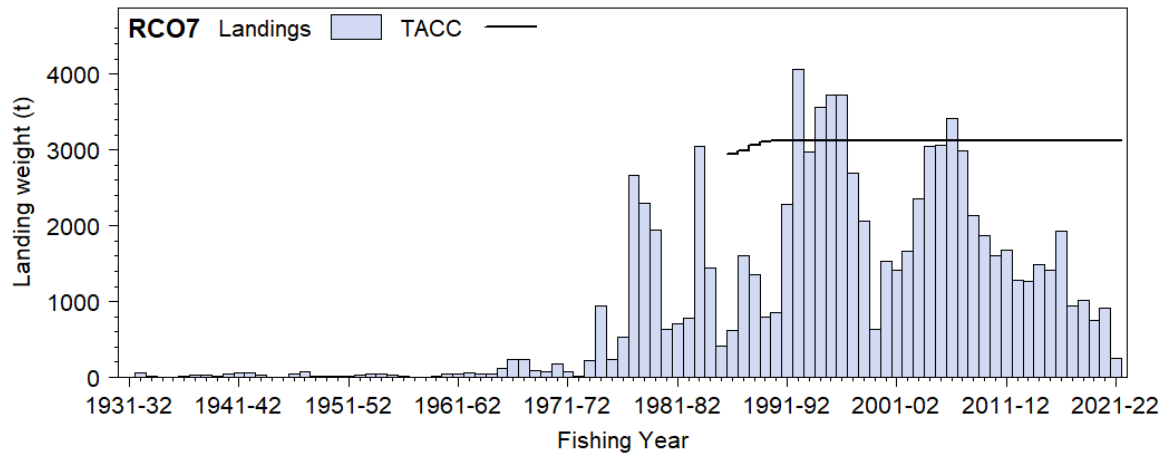


Figure A1. Reported commercial landings and TACC for the main RCO stocks. Top to bottom: RCO 1 (Auckland), RCO 2 (Central East), RCO 3 (South East Coast), and RCO 7 (Challenger). RCO 2 and RCO 3 show in-season adjustments to the commercial limit.