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Fisheries regulation amendments 2021/22
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Submission: Enable commercial fishers to use underwater breathing apparatus to take scallops (Proposal 10)

Recommendations

- 1. The Minister adds** scallops to the limited list of species that commercial fishers are permitted to take using underwater breathing apparatus contingent upon—
 - a. The Minister prohibits the use of dredges to harvest scallops** for commercial or non-commercial purposes in any New Zealand scallop fishery;

- 1. The Minister creates** a spatial plan with local communities to avoid any potential conflicts between commercial and popular non-commercial areas.
 - b. The Minister separates** some areas as juvenile shellfish nurseries to increase scallop biomass.

- 2. The Minister initiates surveys of the SCA 1, SCACS, and SCA7 every 3 years to determine the abundance of scallops prior to any future management review of these stocks—**
 - a. The Minister removes** dredge surveys as a research method for scallop stock assessments and;

- b. The Minister commissions** scallop stock assessments to be carried out by alternative methods such as dive surveys and remote video and AI (Artificial Intelligence) surveys.
- 3. The Minister acknowledges** advice from Fisheries New Zealand that the existing biomass of scallops cannot support fishing at current levels and—
 - a. The Minister** closes the Northland (SCA 1) and Coromandel (SCACS) fisheries for a minimum of three years under section 11 of the Fisheries Act 1996 and;
 - b. The Minister** Reduces the Total Allowable Catch (TAC) in SCA 1 and SCACS to zero while the fishery is closed under s11 of the Fisheries Act 1996.

The Submitters

- 4. The New Zealand Sport Fishing Council (NZSFC) appreciates the opportunity to submit on the proposal of enabling commercial fishers to use underwater breathing apparatus to take scallops.
- 5. The NZ Sport Fishing Council is a recognised national sports organisation of 55 affiliated clubs with over 36,200 members nationwide. The Council has initiated LegaSea to generate widespread awareness and support for the need to restore abundance in our inshore marine environment. Also, to broaden NZSFC involvement in marine management advocacy, research, education and alignment on behalf of our members and LegaSea supporters. legasea.co.nz.
- 6. The New Zealand Underwater Association comprises three distinct user groups including Spearfishing NZ, affiliated scuba clubs throughout the country and Underwater Hockey NZ. Through our membership we are acutely aware that the depletion of inshore fish stocks has impacted on the marine environment and the wellbeing of many of our members.
- 7. Collectively we are ‘the submitters’. The joint submitters are committed to ensuring that sustainability measures and environmental management controls are designed and implemented to achieve the Purpose and Principles of the Fisheries Act 1996, including “maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations...” [s8(2)(a) Fisheries Act 1996].
- 8. Our representatives are available to discuss this submission in more detail if required. We look forward to positive outcomes from this review and would like to be kept informed of future developments. Our contact is Helen Pastor, secretary@nzsportfishing.org.nz.

Background

9. The original restriction of UBA use in scallop harvesting was viewed as a sustainability risk as beds could become depleted. Scallop beds only existed in small parts of quota management areas and being only constrained by a large management area, large quota limits meant risk of localised depletion is high. This can be managed by reducing Total Allowable Catch concurrent with future target scallop biomass.
10. In September 2020 the NZSFC adopted a scallop dredging policy to promote low impact harvesting methods such as hand gathering for commercial and non-commercial fishers. The NZSFC acknowledges there may be deeper areas where dredging may be the only feasible option until innovative low-impact methods are developed. Our broader Rescue Fish policy seeks to have all mobile bottom contact fishing methods banned from inshore waters, within 12 nm of the coastline.
11. In June 2021 the Government released the Revitalising the Gulf action plan which seeks to prohibit recreational dredging in the Hauraki Gulf but allows commercial dredging to continue in designated corridors. This is not an acceptable outcome of the Sea Change process, especially as other gathering methods such as UBA are readily available with adequate planning.

Ban dredging

12. Enabling the use of UBA be introduced concurrently with a total ban on scallop dredging in New Zealand inshore waters and offered as an alternative as stated in the Fisheries New Zealand discussion document. Solutions to the devastated nature of NZ scallop fisheries will not be found while dredging is permitted.
13. The commercial production of scallops must move from wild capture to become cultured within the next 5 years. The technology is immediately available and there are suitable coastal waters available and an encouraging aquaculture public policy.
14. In consistency with the 2021 scallop stock assessment, scallop fisheries cannot support the current amount of fishing pressure. This is a combination of bulk harvesting and environmental wreckage using dredge technologies, and lack of restraint on Total Allowable Commercial Catches.
15. Scallop dredging in New Zealand in the remaining open scallop fisheries (SCA 1 & SCACS) use the self-tipping box dredge as the preferred method of harvest. Fisheries New Zealand states:
 - a. “[The self-tipping] box dredge caused more breakage and incident mortality in scallops than a ring-bag dredge [used in Challenger scallop fishery],

although the ring-bag dredge showed poor efficiency on this substrate type [in SCA 1 and SCACS]”.¹

16. Scallop dredging is inefficient long-term for harvesting scallops, both economically and environmentally. For example:
- b. Studies show it is estimated the self-tipping box dredge only has 40% catch efficiency for scallops²
 - c. International studies affirm scallop dredging in any seafloor environment results in destruction and removal of infaunal and epifaunal non-target species, and results in physical disturbance, damage, and resuspension of sediments³.
 - d. Studies show self-tipping box dredge catch is made up of only 26% live scallops. Although this represented the largest live catch component, this is too low to count dredging as an efficient method if the other 74% of catch is bycatch. The bycatch is made up of seaweeds (11%), starfish (4%), other live bivalves (4%), coralline turfing algae (<1%), other live components (0.5%), dead bivalves and shell (45%), substrate (8%)⁴.
 - e. Studies show scallops caught by self-tipping box dredge have higher mortality rates than scallops left alone, and this mortality rate increases with scallop size. Mortality of dredge-caught scallops averages 20-30%, but mortality rates can be as high as 50%⁵.
17. A port sampling research project in the Maine Scallop fishery, United States of America, compared the average amount and value of scallop meat weight harvested by scallop dredging versus divers using underwater breathing apparatus⁶. Average results showed less scallop meat was landed on each diver trip, but the average value was higher. See below table (Figure 1).

¹ <https://fs.fish.govt.nz/Doc/25127/Full%20Nov%202021%20Plenary.pdf.ashx>

² <https://docplayer.net/57093289-Review-of-dredge-fishing-technologies-and-practice-for-application-in-new-zealand.html>

³ Boulcott, P., & Howell, T.R.W. (2011). The impact of scallop dredging on rocky-reef substrata, *Fisheries Research*, Vol. 110:3, pp.415-420

⁴ https://fs.fish.govt.nz/Doc/23022/12_24_FAR.pdf.ashx

⁵ <https://fs.fish.govt.nz/Doc/25127/Full%20Nov%202021%20Plenary.pdf.ashx>

⁶ <https://www.maine.gov/dmr/science-research/species/scallops/research/documents/necrpt.pdf>

Table 3. Fleet characterization; (a) top - dragger summary statistics, (b) below – dive boat summary statistics. All data combined.

Dragger	\bar{u} (\pm s.d.)	<u>min.</u>	<u>max.</u>
<i>Boat length (ft)</i>	36.7 (3.50)	31	45
<i>Crew size</i>	1.9 (0.60)	1	4
<i>Depth fished (ft)</i>	62.1 (37.60)	7	288
<i>Bottom time per tow (minutes)</i>	11.8 (3.90)	4	20
<i># Tows per hour</i>	4.5 (2.00)	2	8.5
<i>Pounds (meat) per trip</i>	57.1 (38.70)	2	180
<i>\$ value per trip</i>	\$334.94 (184.00)	\$29.45	\$934.60
<i>Total drag width (ft)</i>	6.15* (1.50)	4.5	10

* 7.61 (\pm 2.23) in Hancock County vs. 5.69 (\pm 0.71) in Washington County

Diver	\bar{u} (\pm s.d.)	<u>min.</u>	<u>max.</u>
<i>Boat length (ft)</i>	32.4 (6.50)	16	42
<i>Crew size</i>	2.4 (0.50)	2	3
<i>Depth fished (ft)</i>	39.1 (13.00)	20	65
<i>Bottom time per dive (minutes)</i>	42.2 (9.00)	25	60
<i>Dive hours per trip</i>	3.5 (1.70)	1.3	6.7
<i>Pounds (meat) per trip per diver</i>	37.6 (31.40)	2.4	139.8
<i>\$ value per trip</i>	\$357.18 (290.23)	\$13.20	\$1,256.00

Figure 1. Comparison of scallop dredge and diver data for port sampling (Schick & Feindel, 2005)

State of scallop fisheries

18. The 2021 NIWA scallop biomass surveys show concerning results for scallop fisheries SCA 1 and SCA CS, the last two fisheries with commercially viable scallop beds in New Zealand waters. Here are results—
 - a. There is an overall low abundance of scallops in both SCA 1 and SCA CS, which raises concerns for long-term sustainability of these fisheries.
 - b. In both commercially targeted scallop beds and non-commercially targeted scallop beds, the Coromandel fishery (SCA CS) supports larger densities of scallops compared to Northland (SCA 1).

19. Observations from the 2021 NIWA stock assessment goes as follows—
 - a. The above results were to be expected as there was minimal fishing pressure in Opito Bay (one of the main commercial and recreational scallop areas) over the 2020/2021 summer due to a locally enforced rāhui and voluntary ban on scallop harvesting.

- b. Fisheries New Zealand needs to protect brood stock as there is little understanding of which of the remaining beds are contributing to growth of the next generation of scallops. Fishing pressure and poor settlement are main contributors to decline of once viable scallop beds.

20. The SCAWG 2021 report on the Challenger scallop fishery (SCA 7) also shows sad results. Here are results—

- a. The Challenger scallop fishery (SCA 7) has been shut since 2017, around 5 years.
- b. Although the fishery has been shut, scallop numbers aren't recovering and it is likely the fishery will not be able to open for a very long time.
- c. It is clear the harvest plan enacted in 2017 in SCA 7 stating it would “ensure sustainability and meet the needs of all sectors” did not work.
- d. An excerpt from the 2021 Prime Minister’s Chief Science Advisor report⁷—

“The Challenger Scallop fishery (SCA7) is one such stock – located in Tasman and Golden Bays. In the late 1950s, commercial dredging for scallops began and peaked at 10,000 tonnes in 1975. [149] The fishery then rapidly declined and closed for two years in the 1980s. Despite a short-lived recovery in the 1990s (though reaching only half of the volumes harvested in the 70s), the fishery has never recovered, even with enhancement activities being undertaken (such as reseeded populations with scallop spat). Other factors, such as sediment flows into the bays (and consequent suspended sediment), may also be contributing to the lack of substantial recovery over time, despite intense management and fishery enhancement efforts. [150] As referenced in the section ‘Managing stocks with incomplete data’, in 2020 a Southern Scallop Strategy was implemented for SCA7, which acknowledged there has been little evidence to suggest the resource is recovering and that a fresh approach is needed.”

Assessment methods

- 21. Scallop fisheries around New Zealand have relied on self-regulation over regular assessments in the past decade.
- 22. NIWA is looking at switching from dredge technologies to remote AI (Artificial intelligence) technologies where possible. They have been awarded \$1M to fund the

⁷ <https://www.pmcsa.ac.nz/topics/fish/challenges-for-the-marine-environment/>

development of AI technology. This is one alternative method offered and under trial already.

23. An examination on alternative methodologies was carried out in the Maine Scallop fishery, United States of America⁸. One alternative method was the use of diver transects by drop video camera. Although this is a slightly outdated alternative, results showed diver transects were able to accurately portray actual scallop abundance (95% confidence within 25% of mean known density). Further application of this method was rejected as drop video was too time consuming, however, this is where current remote AI technologies would prove more useful.
24. Any review method adopted in New Zealand should be as bottom-line measures—
 - a. A review of the effects of dredging on scallop population, larval settlement and mortality of juvenile scallops.
 - b. A review of commercial and recreational regulatory controls.
 - c. The feasibility of commercially hand gathering scallops.
 - d. An assessment of scallop densities in diver only areas open to recreational fishers

Economic benefits of hand gathering scallops

25. **The Minister ought to encourage commercial hand gathering and other low impact methods of harvesting scallops as—**
 - a. It would deliver a higher quality product
 - b. A Higher quality product would attract a market premium
 - c. Hand-gathering using underwater breathing apparatuses would protect the environment from ongoing damage, rebuilding benthic communities and enhancing overall productivity of scallop bed areas
 - d. Commercial fishers and the scallop fishing industry can earn more due to the above statements, higher market values and more long-term sustainable fisheries.
26. **We the submitters acknowledge** commercial hand gathering of scallops will be economically unviable in the short term upon the basis that:

⁸ <https://www.maine.gov/dmr/science-research/species/scallops/research/documents/necrpt.pdf>

- a. Currently, scallop biomass across all viable scallop management areas (SCA 1, SCACS, SCA 7) is low, and cannot support fishing at current levels.

27. However, once the scallop fishery recovers, the financial viability will also become realized.

28. Finally, if the Minister wants to ensure the future of scallops as a shellfish available for customary, commercial, and non-commercial use, then the most durable action is to remove them from the QMS and apply a regional management strategy that sees abundant scallop beds and low hand gathering exploitation rates applied. **The quickest route to species depletion and ecosystem loss is to retain them in the QMS.**