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Sustainability Review 2021
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5 February 2021

Submission: Review of rock lobster TACs in CRA 1, 3, 4, 7, and 8

Recommendations

1. **The Minister adopt option 1.2 for CRA 1**: Reduce the Total Allowable Catch to 180.5 tonnes (t), by reducing the Total Allowable Commercial Catch (TACC) by 9% to 100 tonnes, retaining the current allowance for Maori customary fishing, setting a recreational allowance of 29 t (9% reduction), and reducing the allowance for other sources of mortality by 23% to 31.5 t.
2. **The Minister adopt option a modified option 3.3 in CRA 3**: Decrease the Total Allowable Catch (TAC) to 305 t by reducing the Total Allowable Commercial Catch (TACC) by 13% to 195 tonnes, retaining the current allowance for Maori customary fishing, setting a recreational allowance of 15 t (25% reduction) that takes into account s111 landings, and reducing the allowance for other sources of mortality by 16% to 75 t.
3. **The Minister adopt option a modified option 4.2 in CRA 4**: Reduce the Total Allowable Catch (TAC) to 393 t by reducing the Total Allowable Commercial Catch (TACC) by 12% to 280 tonnes, retaining the current allowance for Maori customary fishing, setting a recreational allowance of 45 t (47% reduction) that takes into account s111 landings, and reducing the allowance for other sources of mortality by 56% to 33 t.
4. **The Minister adopt option 5.2 in CRA 5:** Reduce the TACC by 6%, to 484.5 tonnes by reducing the Total Allowable Commercial Catch (TACC) by 5% to 332.5 tonnes, retaining the current allowance for Maori customary fishing at 40 t, setting a recreational allowance of 75 t (14% reduction), and setting the allowance for other sources of mortality at 37 t.
5. **The Minister adopt option P.2 for PCH 1**: Increase the TAC from 65.3 to 79.3 tonnes by increasing the Total Allowable Commercial Catch (TACC) by 22% to 49.3 tonnes, setting the allowance for Maori customary fishing at 10 t, setting a recreational allowance of 15 t, and setting the allowance for other sources of mortality at 5 t.
6. **The Minister revoke the concessions in CRA 3, 7 and 8** that permit commercial fishers to take male rock lobster with a tail width smaller than the minimum recreational size limit of 54 mm.
7. **The Minister acknowledges the concession in CRA 3 is unfair and must be removed** to provide for the needs of customary and amateur fishers in the wider Gisborne/East Cape region.

The submitters

8. The New Zealand Sport Fishing Council (NZSFC) appreciates the opportunity to submit on the proposals to review Total Allowable Catch (TAC), allowances and the Total Allowable Commercial Catch (TACC) for rock lobster (*Jasus edwardsii*) in Quota Management Areas CRA 1, 3, 4 & 5 and Packhorse rock lobster (PHC 1) (*Sagmariasus verreauxi*). Advice was received on 16 December 2020 with submissions due by 5 February, 2021.

9. The New Zealand Sport Fishing Council is a recognised national sports organisation with over 36,200 affiliated members from 55 clubs 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. www.legasea.co.nz.

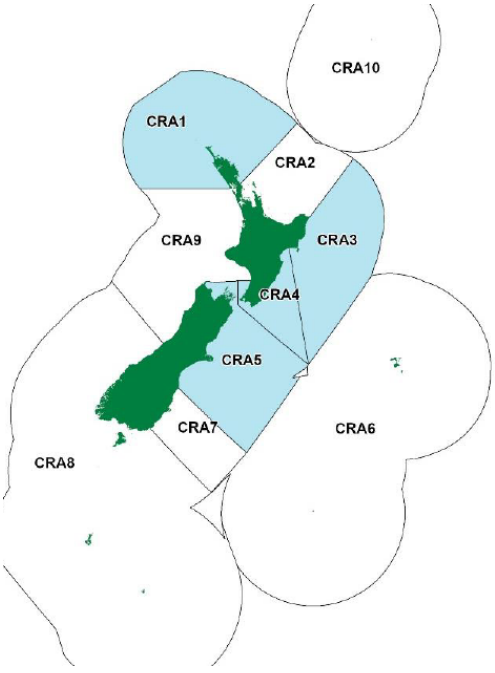
10. The New Zealand Underwater Association is comprised of three distinct user groups including Spearfishing NZ, affiliated scuba clubs throughout the country and Underwater Hockey NZ. Through our membership we are acutely aware that the depletion of red rock lobster has impacted on the marine environment and the wellbeing of many of our members.

11. Together we are '*the submitters*'. The 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].

12. 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

13. Rock lobster is an important species and fishery for all sectors in the Quota Management Areas under review. In the past rock lobster were abundant and played a significant role in coastal ecosystems. Large catches were taken out of some ports in the 1920s for canning and export to Europe. Widespread commercial rock lobster fishing has occurred since 1945. Updated estimates of recreational harvest are available from the 2017–18 National Panel Survey. Few of the 7000 New Zealand residents on the panel caught rock lobster, so the estimates are best in areas where most fishing occurred.



14. CRA 1 is fished on the east and west coast of Northland. Since 1999 a large proportion of the commercial catch has come from the Three Kings area, a group of 13

islands about 55 kilometres northwest of Cape Reinga. A new stock assessment for CRA 1 was completed in 2019.

15. CRA 3 supports an unusual fishery, dominated by large numbers of small male rock lobster north of Tūranganui-a-Kiwa/Poverty Bay, while in the south, around Mahia Peninsula, rock lobster are generally larger and females are often caught. There is also a concession to allow commercial fishers to take small male rock lobster in winter months in CRA 3, which is used in the northern area. Anecdotal information suggests that a significant portion of the winter commercial catch is between 52 mm and 54 mm tail width, as permitted under the concession. A new stock assessment for CRA 3 was completed in 2019.

16. CRA 4 was the second largest rock lobster fishery in New Zealand for many years, with miles of rugged rocky coastline and high rock lobster settlement rates. There have been periods of low commercial catch rates and the Total Allowable Commercial Catch (TACC) has been reduced four times and increased four times over the last 10 years, due to the operation of management procedures.

17. CRA 5 is currently the third largest rock lobster fishery in New Zealand. It is coming off a period of high abundance, particularly along the Kaikoura Coast, but there was significant disruption to this area and access to the fishery following the Kaikoura earthquakes in 2018. The Total Allowable Commercial Catch has been held at 350 t since 1999, in contrast to many other areas where commercial fishers supported management procedures as a way of maximising catch.

18. Packhorse rock lobster grow larger than the red rock lobster and are caught mainly in northern New Zealand. There is one national Quota Management Area, PHC 1. Catches were low in the 1990s and there was some concern for the sustainability of the stock. This is the first review of the TAC since 1992 and no allowances for non-commercial catch or other mortality are currently in place. Packhorse catch rates have increased in recent years and more are being caught in the outer Hauraki Gulf and Bay of Plenty.

Management proposals

19. Fisheries New Zealand and the National Rock Lobster Management Group (NRLMG) have released a Discussion Document proposing changes to the Total Allowable Catch (TAC) for rock lobster in five Quota Management Areas from 1 April 2021. Commercial fishers have changed to the new electronic reporting system which provides more detailed information but the catch rates (CPUE) that have been used to inform decision rules may not be directly comparable with the previous system.

20. New quantitative stock assessments have been completed for CRA 4 and CRA 5. Rapid updates of last years CRA 1 and CRA 3 stock assessments have been reviewed and accepted by the science working group and basic assessment of surplus production was accepted for Packhorse based on reported harvest and catch rates. No management procedures were developed or used this year.

21. The alternatives to the status quo include:

- TACC decreases of 9% for CRA 1 (Northland), 6% to 20% for the CRA 3 (Gisborne) fishery, 12% to 18% for CRA 4 (Wellington Hawkes Bay) and a TACC decrease of 5% in CRA 5 (Canterbury Marlborough) with reductions to the other allowances for recreational catch and other mortality (Table 1);

- Increases of 22% to 44% for the national packhorse TACC with allowances set for other fisheries and related mortality.

Table 1: Proposed management options (in tonnes) for CRA 1, CRA 3, CRA 4, CRA 5, and PHC 1 from 1 April 2021.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	Other mortality
CRA 1 Northland	**Option 1.1:** Status quo	203	110	20	32	41
	Option 1.2: Decrease the TAC by 11%	180.5 ↓ (11%)	100 ↓ (9%)		29 ↓	31.5 ↓
CRA 3 Gisborne	**Option 3.1:** Status quo	351.9	222.9	20	20	89
	Option 3.2: Decrease the TAC by 10%	317.5 ↓ (10%)	209.5 ↓ (6%)		13 ↓	
	Option 3.3: Decrease the TAC by 14%	302 ↓ (14%)	195 ↓ (13%)		12 ↓	75 ↓
	Option 3.4: Decrease the TAC by 19%	284 ↓ (19%)	178 ↓ (20%)		11 ↓	
CRA 4 Wellington Hawke's Bay	**Option 4.1:** Status quo	513.8	318.8	35	85	75
	Option 4.2: Decrease the TAC by 24%	388 ↓ (24%)	280 ↓ (12%)		40 ↓	33 ↓
	Option 4.3: Decrease the TAC by 30%	361 ↓ (30%)	260 ↓ (18%)		33 ↓	
CRA 5 Canterbury Marlborough	**Option 5.1:** Status quo	514	350	40	87	37
	Option 5.2: Decrease the TAC by 6%	484.5↓ (6%)	332.5 ↓ (5%)		75 ↓	
PHC 1 All of New Zealand	**Current settings**	-	**40.3**	-	-	-
	Option P.1: Set the TAC at 65.3 tonnes	65.3	40.3	10	10	5
	Option P.2: Set the TAC at 79.3 tonnes	79.3	49.3 ↑ (22%)	10	15	5
	Option P.3: Set the TAC at 88 tonnes	88	58 ↑ (44%)	10	15	5

National Rock Lobster Management Group

22. Fisheries New Zealand (FNZ) and the Minister of Fisheries reviewed the membership of the National Rock Lobster Management Group (NRLMG) in 2020. New members representing recreational and customary fishers and environmental NGOs were appointed. The terms of reference for the NLRMG have been revised and a summary of the work undertaken will be published in an annual report.

Remove the concessions

23. The submitters and NZSFC member clubs in CRA 3 have made it clear repeatedly that the concession that allows commercial fishers to take male rock lobster with a tail width of 52 mm or 53 mm is unfair and must be removed. The recreational minimum tail width size limit is 54 mm.

24. In 2014 these groups developed a Crayfish 3 policy that aims to increase the size and abundance of rock lobster in CRA 3 and ensure the needs of customary and amateur fishers are met. Since 2014 that policy has been shared with FNZ and the NRLMG.

Statutory obligations

25. In 2009 the Supreme Court confirmed the Minister has discretion when setting catch limits however, the Court made it very clear that "sustainability is to be ensured"[1]. When managing our taonga, our precious crayfish stocks, the Minister must act in a precautionary manner by setting catch limits to ensure all mortality is retained within the Total Allowable Catch (TAC).

ROCK LOBSTER – PROPOSALS

Crayfish 1 (CRA 1) Northland

CRA 1 Stock Assessment

26. CRA 1 has a range of environments from rugged, exposed coastline out west, to the Three Kings area with upwellings and strong currents, and East Northland with extensive rocky coastline warmer waters and sheltered bays. Since the late 1990s there has been a significant increase in the proportion of catch taken from the reporting areas for the Three Kings area (901) and the west coast (939) where catch rates are higher, and less catch has been taken from East Northland (903 and 904) where catch rates are lower. While area is taken into account in the analysis of CRA catch rates, much of the data that drives the stock assessment results comes from the north western area.

27. The assumption that growth rates and recruitment are the same for the north western area and East Northland is probably wrong however, there has been insufficient data collected from the East Northland commercial fishery to use separate areas in the stock assessment model.

28. The 2019 stock assessment estimated that the vulnerable biomass (males of legal size at the start of the fishing year) showed a flat or declining trend over the last 25 years. The base case estimated vulnerable biomass to be 15.5% of unfished biomass while spawning stock biomass (mature females) was at 37%.

CRA 1 Management

29. Last year there was a late change to the interim management target for CRA 1. This was to reduce catch to prevent the stock declining any further over the next 5 years. In March 2020 the Minister

[1] NEW ZEALAND RECREATIONAL FISHING COUNCIL INC AND ANOR V SANFORD LIMITED AND ORS SC 40/2008 [28 May 2009]. Para 39.

decided to reduce the TAC by 70 t (26%) and the TACC by 21 t (16%). Recreational catch had already declined according to the National Panel Survey and from April 2020 the allowance was reduced by 18t (36%). The allowance of other sources of fishing mortality was revised in line with the estimate used in the stock assessment, down 31 t (43%).

30. The estimate of recreational catch from the 2017-18 National Panel Survey was 16 tonnes but the confidence interval was large (CV of 46%). It is likely that the recreational catch has been declining over recent years on the east coast of Northland where recreational fishing effort is concentrated. This fits with the decline in spring/summer commercial catch rates in East Northland over the last six years. In 2013-14 a survey that combined data from over 12,000 boat trips with National Panel Survey day from shore based trips estimated the recreational harvest from CRA 1 at 37.3 t (CV 17%) with an additional 4.4 tonnes taken as recreational catch from commercial fishing vessels. The total of 41.7 t was probably an underestimate as the interview survey did not cover boats returning to swing moorings or boats staying out overnight on survey days.

31. The rapid update of stock assessment model predicts that vulnerable biomass will decline in the short term, even with the catch reductions introduced last year, but will have increased to about 16.5% of unfished biomass by 2024. Spawning stock biomass is predicted to be about 39% of unfished biomass by 2024. The conclusion is that there is a better than even chance that biomass will increase but the change may not be much. However, the models don't include data from the 2020-21 fishing year and the changes that Covid-19 had on fishing patterns and market demand.

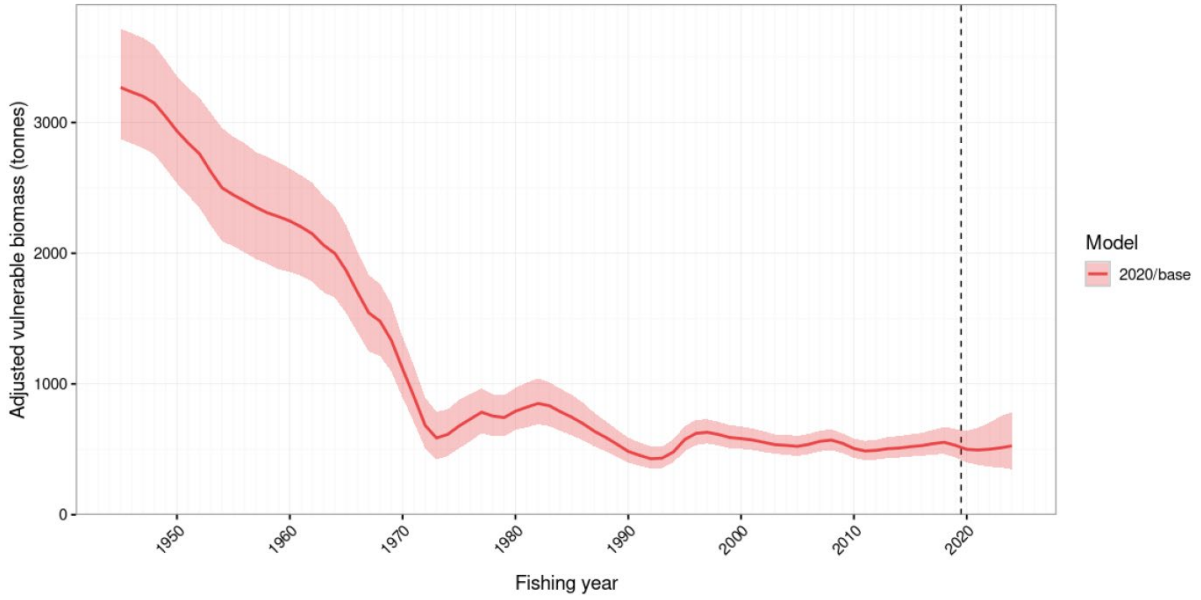


Figure 1: The stock assessment estimates of the legal sized male rock lobsters in CRA 1 at the beginning of each fishing year in tonnes. These estimates start at 3216 t in 1945, the shaded area represents the uncertainty around the median estimate (red line). The 5 year projections based on current harvest from April 2019 are on the right of the dotted line.

32. We submit that the CRA 1 stock needs to be rebuilt. The current size of the overall vulnerable biomass is close to its lowest historical level and is predicted to decline in the short term. While

commercial fishing effort in East Northland is down, low stock abundance is severely limiting access to the fishery for recreational and customary fishers.

33. More work is required on real management targets in the coming year and the time frames to rebuild stocks. The submitters do not consider a vulnerable biomass around 17% in 2024 is an acceptable rebuild rate in this important shared fishery.

34. **The submitters support option 1.2 with a reduction in the Total Allowable Catch to 180.5 t** by reducing the Total Allowable Commercial Catch (TACC) by 9% to 100 tonnes, retaining the current allowance for Maori customary fishing, setting a recreational allowance of 29 t (9% reduction), and reducing the allowance for other sources of mortality by 23% to 31.5 t.

Crayfish 3 (CRA 3) East Cape to Mahia

CRA 3 Stock Assessment

35. CRA 3 is another area with extensive rocky coastline and reef areas suitable for rock lobster. However, the distribution of crayfish is unusual, with an abundance of small males and few females north of Gisborne, and larger crayfish with more females further south, around Mahia Peninsula. In recent years there have been different trends in stock abundance between the north and the south. At times there are large numbers of small CRA but this varies in what appears to be a long-term cycle.

36. In CRA 3 there was enough information from catch sampling and tagging to split the 2019 stock assessment into two areas, East Cape and Mahia. These were then added to show overall stock trends and projections for the next 5 years.

37. The peak of the current cycle was in 2013 and stock biomass has been in a gradual decline since then (Figure 2). The 2020 rapid assessment update estimated CRA 3 vulnerable biomass to be 14% or 15% of unfished biomass while spawning stock (mature female) biomass was estimated at 78%. CRA 3 vulnerable biomass is projected to be maintained or decrease slightly relative to 2020 levels over the next few years at current catch levels.

38. The very high spawning biomass is a result of the assumption in the stock assessment model that equal numbers of male and female rock lobster settle and grow. Catch sampling shows that few females are ever caught so the model estimates that they are somewhere in CRA 3 but just not vulnerable to fishing. This is one reason why the female biomass as a proportion of unfished spawning stock biomass is not a good measure of stock status in many New Zealand crayfish stocks. It is also why we find it difficult to believe the outputs from the model as being a true reflection of the CRA 3 fishery.

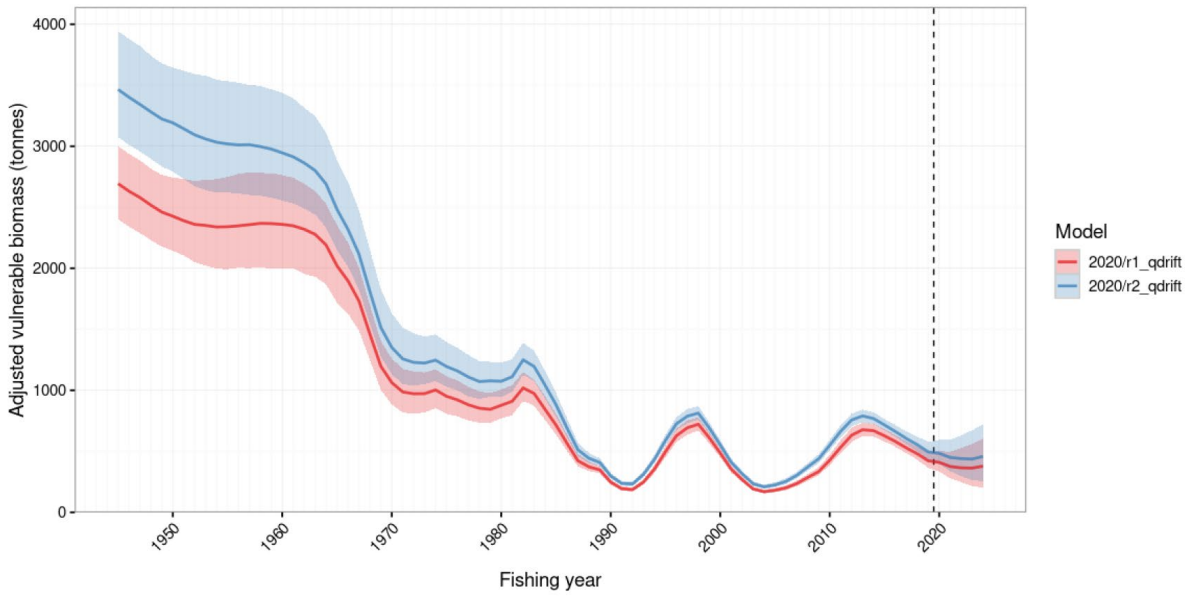


Figure 2: The 2020 rapid assessment estimates of the legal sized male rock lobsters in CRA 3 at the beginning of each fishing year in tonnes. The range of models include two growth rate assumptions (r1 and r2). The 5 year projections based on current harvest from April 2019 are on the right of the dotted line.

CRA 3 Management

39. In 2020 there was a proposal to reduce the TAC by 14%, the TACC by 13% and the recreational allowance by 35 % to halt the predicted decline in the CRA 3 stock. The Minister decided not to reduce the TAC because of the impact of Covid-19 on commercial fishers who supply the export market, and to review management settings again in 2021.

40. The estimate of recreational catch in CRA 3 from the 2017-18 National Panel Survey was 12.2 tonnes with a confidence interval (CV) of 26%). This harvest is slightly higher than the previous National Panel Survey estimate but not statistically different. In addition, about 3 tonnes is reported as recreational catch taken from commercial fishing vessels. The recreational harvest of CRA along the East Coast and Mahia Peninsula will vary from year to year, depending on weather and swell conditions over the summer period as well as availability of legal size crayfish. The 35% reduction of the recreational allowance to 13 t proposed in the discussion document does not cover the current estimates of combined take under the amateur fishing regulations and Section 111 provisions.

41. Recreational harvest will vary year on year, so the submitters recommend the Minister uses the best available survey information on recreational harvest and sets the recreational allowance at 15 tonnes (12 t plus 3 t).

42. The submitters strongly support the removal of the concession for commercial fishers allowing them to harvest male CRA down to 52 mm tail width during winter. This has been an ongoing issue for NZSFC members in the CRA 3 area for many years, particularly in the Gisborne region. The stock assessment shows that there was no change in the productivity of the stock if the concession was revoked, but it would remove the unfair advantage that the commercial fishers

have on top of their obvious advantage in fishing power and ability to shift fishing effort to maintain catch rates.

43. A three-year potting survey was undertaken using standard rock lobster pots, fished inside the Te Tapuwae o Rongokako Marine Reserve and on similar reef structures to the north and south of the reserve. It found a much higher incidence of tail fin necrosis (TFN) for males outside the reserve (17%) than inside the reserve (2%)[2]. This incidence is consistent with damage caused by pots and handing. The necrosis blackens and rots the tail reducing commercial value, increasing mortality and potentially spreading to other lobsters.

44. The potting survey also provides data on the size distribution of rock lobster caught inside the marine reserve and on adjacent fished areas. The survey was conducted between November 2003 and November 2006, just 4 to 7 years after the reserve was established. 90% of rock lobster caught were male. Even in this short period, there is a remarkable difference in the size of male rock lobster inside the reserve with a broad spread of sizes and mode from 58 to 61 mm. Outside the reserve 84% of males were 48 to 53mm and just 16% were of legal size for recreational fishers. with just 2% were 58 mm or larger. Inside the reserve 60% of male rock lobster were 58 mm or larger (Figure 3).

45. The implication from these data suggests that the small size of rock lobster outside the reserve and around Gisborne is largely due to over exploitation. While growth rates may be slower than some other areas, 4 to 7 years was enough time to totally change the size structure of cray caught in pots.

[2] Freeman and McDiamond. (2009). Healthier lobsters in a marine reserve: effects of fishing on disease incidence in the spiny lobster, *Jasus edwardsii.*

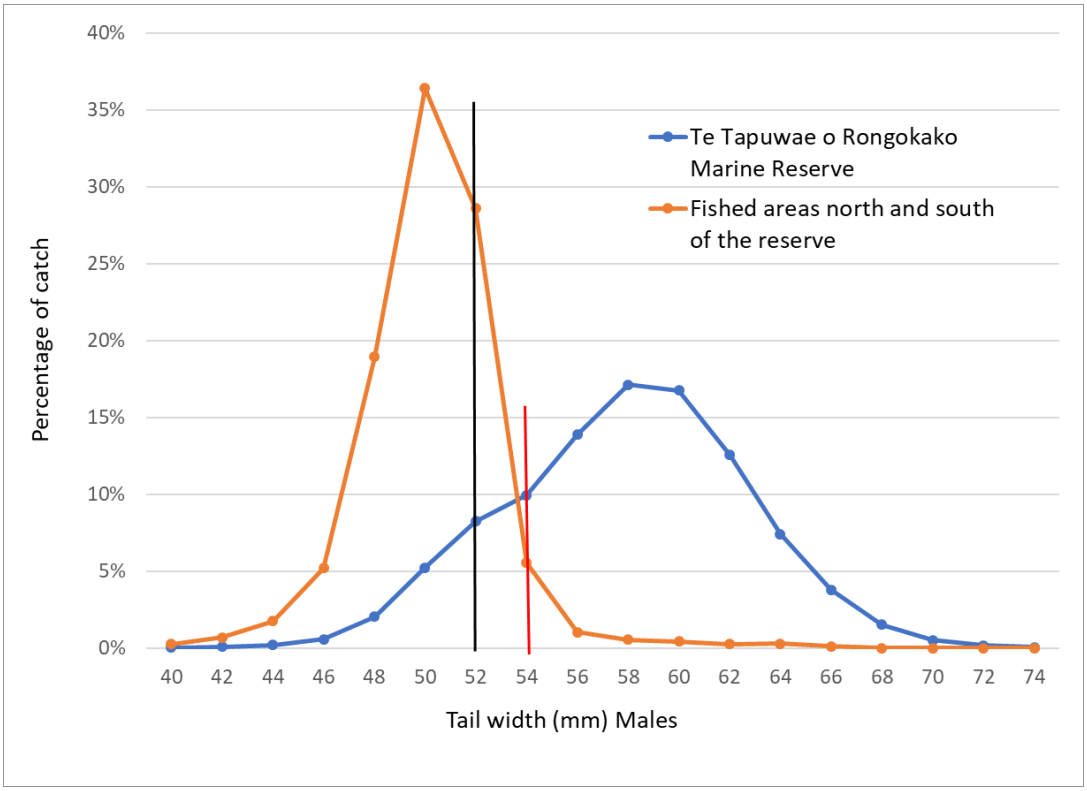


Figure 3: Percentage of male rock lobster by 2 mm tail width bin outside the Te Tapuwae o Rongokako Marine Reserve (orange) and inside the reserve (blue). The winter commercial male tail with size limit of 52 mm is the black vertical line the recreational size limit of 54 mm is the red vertical line.

46. The management proposals for 2021-22 are based on a range of stakeholder views however, questions remain about what the projections mean and what is an appropriate management target. The projections show that the stock will decline if the current catch levels are maintained (even using the reduced catch estimates for recreational harvest and illegal take). The short term objective, to maintain vulnerable biomass at current levels, is a stop gap measure until long-term management targets can be established.

47. Given that this is a fishery that predominantly catches male rock lobster the submitters do not support maintaining the stock at or below 14% or 15% vulnerable biomass. Historically rock lobster have provided important ecosystem services in the coastal waters of CRA 3. Large rock lobster in particular feed on a wide range of species and help maintain a diverse and healthy ecosystem.

48. **The submitters support a modified option 3.3 with a decrease to the Total Allowable Catch (TAC) to 305 t** by reducing the Total Allowable Commercial Catch (TACC) by 13% to 195 tonnes, retaining the current allowance for Maori customary fishing, setting a recreational allowance of 15 t (25% reduction) that takes into account s111 landings, and reducing the allowance for other sources of mortality by 16% to 75 t.

Crayfish 4 (CRA 4) Hawke Bay to Wellington

CRA 4 Stock Assessment

49. CRA 4 has a large area of productive rock coast and reefs. It has supported a reasonably large rock lobster fishery of over 500 t a year historically, but productivity has declined in recent years. Periods of higher stock abundance look similar in timing and extent to those in CRA 3. The vulnerable biomass is currently close to the historic lows (Figure 4).

50. A full stock assessment for CRA 4 was completed in 2020, including the model updates that were used for CRA 1 and CRA 3, plus five years of data since the last assessment. The 2019 vulnerable biomass (males of legal size at the start of the fishing year) is estimated to be 12.6% of the unfished level (within a range of 10% to 16.3%) and this is predicted to decline to 10.7% (range 4% to 19.8%) over 5 years. Females are not caught or retained as much as males and the model estimates the spawning stock biomass to be 47.7% (range of 33% to 60%) of the unfished level, which is an historic low for this stock.

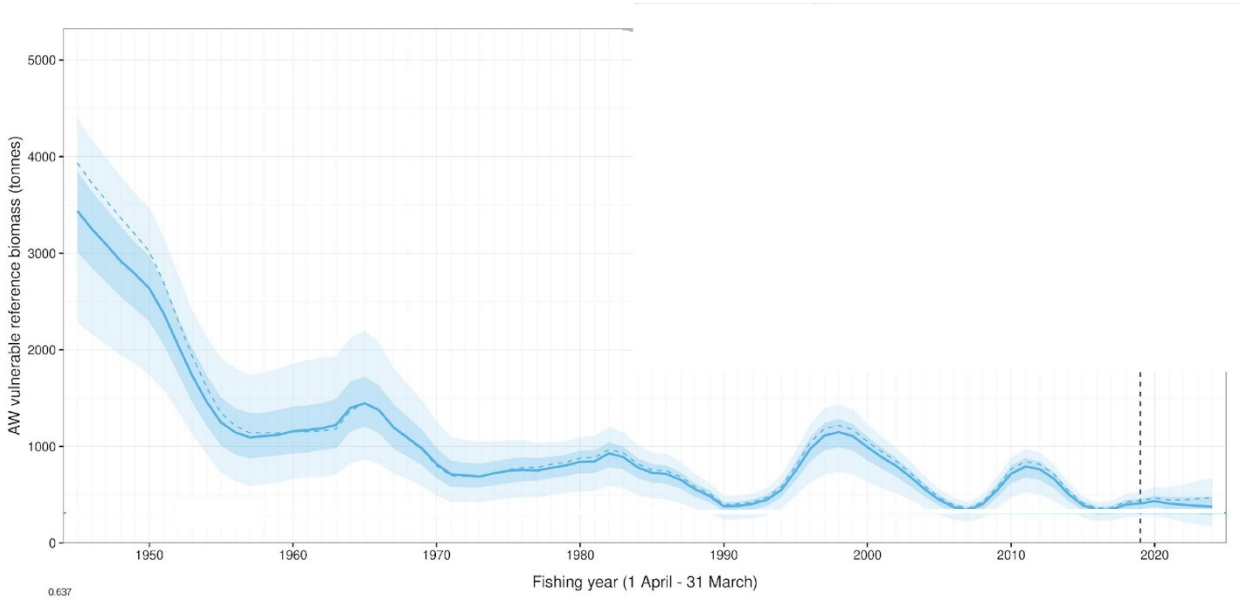


Figure 4: The 2020 stock assessment estimates of the legal sized male rock lobsters in CRA 4 at the beginning of each fishing year since 1945 in tonnes. The 5 year projections based on current harvest from April 2019 are on the right of the dotted line.

CRA 4 Management

51. The CRA 4 TACC was reduced from 397 t to 289 t for the 2017–18 fishing year through the operation of a Management Procedure that used commercial catch rates to recommend annual changes to the TACC. The operation of the same Management Procedure in 2017 resulted in an increase in the TACC to 319 t for the 2018–19 fishing year. The Management Procedure recommended increases from 319 t to 380 t for 2019–20 and to 378 t in 2020–21 were rejected by most stakeholders and the Minister, who is the decision maker.

52. Management Procedures are not being developed or used for stocks with updated stock assessments. Since the phasing in of electronic reporting over the last two years for most inshore commercial vessels there have been inconsistences in the way catch an effort are recorded and it may be several years until a reliable time series in rock lobster catch per unit effort is available.

53. The National Panel Survey estimate 41 t (CV 22%) of red rock lobster was harvested in CRA 4 by amateur fishers in 2017–18. Fisheries New Zealand propose to set the allowance for recreational harvest at 40 t. As in CRA 3, no allowance has been made for s111 recreational take on commercial vessels. This catch is reported on commercial catch returns and the most recent estimate is 4.4 t. Therefore, the recreational allowance based on the best available information is 45 t.

54. The submitters support management action to rebuild rock lobster stocks in CRA 4. Given the conservative approach taken by stakeholders and Iwi over the last three years we support a reduction for 2021-22 and a review following the rapid update assessment next year.

55. **The submitters support a modified option 4.2 with a reduction in the Total Allowable Catch (TAC) to 393 t** by reducing the Total Allowable Commercial Catch (TACC) by 12% to 280 tonnes, retaining the current allowance for Maori customary fishing, setting a recreational allowance of 45 t (47% reduction) that takes into account s111 landings, and reducing the allowance for other sources of mortality by 56% to 33 t.

Crayfish 5 (CRA5) Canterbury to Marlborough

CRA 5 Stock Assessment

56. CRA 5 is another area with a large amount of rocky coastline and reef habitat. The most productive area is the Kaikoura Coast south to Motunau. There was concern for rock lobster in this area following the 2016 Kaikoura earthquakes. Access for commercial fishers is still difficult in some areas but the TACC of 350 t has been caught every year.

57. A full stock assessment for CRA 5 was completed in 2020, including the model updates that were used for CRA 1 and CRA 3, plus five years of data since the last assessment. This is another stock where two areas are assessed separately then combined. The largest catch comes from Area 1 Kaikoura and Canterbury. Area 2 is north of the Clarence River & includes the Marlborough Sounds. CRA in Area 1 are coming off a period of high abundance around 2010 which was not seen in Area 2 (Figure 5).

58. The 2019 vulnerable biomass (males of legal size at the start of the fishing year) for both areas combined is estimated to be 41.8% of the unfished level (within a range of 34% to 52%) and this is predicted to decline to 27.3% (range 19% to 40%) over 5 years. Females are not caught or retained as much as males and the model estimates the spawning stock biomass to be 60.3% (range of 53% to 72%) of the unfished level.

59. The main concern in CRA 5 is the rapid stock decline predicted in the main fishing area if recruitment remains at current levels. What management levers can be used and when? There is also concern about availability and abundance of rock lobster in the Marlborough Sounds.

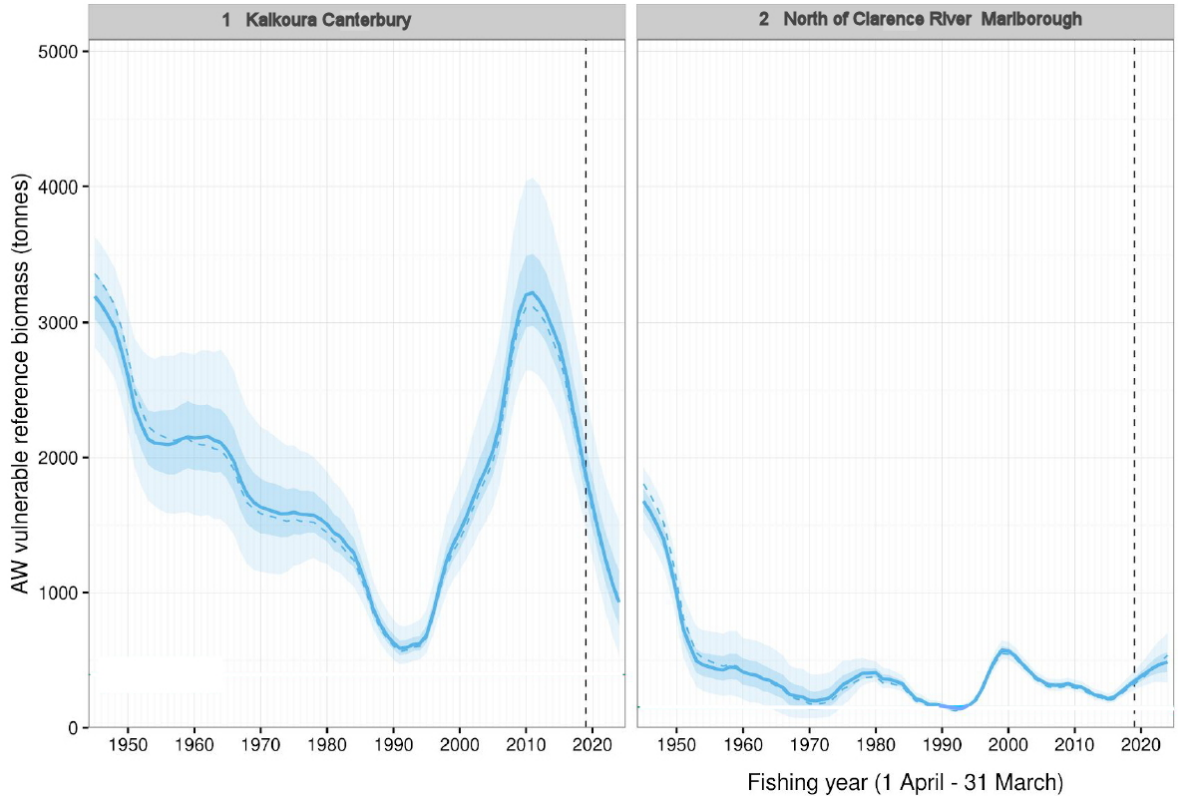


Figure 5: The 2020 stock assessment estimates of the legal sized male rock lobsters in CRA 5 at the beginning of each fishing year since 1945 in tonnes. The trend in stock abundance is different between the two assessment areas. The 5 year projections based on current harvest from April 2019 are on the right of the dotted line.

CRA 5 Management

60. Unlike many areas, the CRA 5 TACC has remained unchanged (350t) since 1999 and we acknowledge the commercial fishers who have resisted past proposals to increase the TACC when abundance was high. Their conservation efforts have contributed to an extended period of good catch rates and resilience when the Kaikoura earthquakes destroyed a proportion of the inshore habitat. The earthquakes also restricted access to the region and boating facilities for an extended period.

61. A reduction to the TAC would be a precautionary approach, but will only be effective if catch is removed from the areas with low recruitment and/or high fishing pressure. The CRA 5 commercial fishers have adapted to the earthquake disruption and shifted fishing effort to areas with higher catch rates. A 5% reduction in TACC and a harvest strategy initiated by commercial fishers that identifies areas that are showing the most decline and shifts fishing effort away from those areas ought to be sufficient to slow the decline in CRA 5 biomass until the next pulse of recruitment comes through.

62. **The submitters support option 5.2 with a 6% reduction in the TAC to 484.5 tonnes** by reducing the Total Allowable Commercial Catch (TACC) by 5% to 332.5 tonnes, retaining the current allowance for Maori customary fishing at 40 t, setting a recreational allowance of 75 t (14% reduction), and setting the allowance for other sources of mortality at 37 t. The advantage of the rapid update assessments is that changes to the trend in stock biomass and new projections can be reviewed.

Packhorse Rock Lobster (PCH) National

Packhorse Stock Assessment

63. Packhorse are large rock lobster generally caught in Northland. Packhorse are known to move or migrate long distances at times. In recent years there has been an increase in the number of Packhorse (PHC) in northern New Zealand with increased catch in CRA 2 and CRA 3 red rock lobster management areas.

64. There is limited data to assess the PCH stock in New Zealand. A simple biomass dynamics model used commercial landed catch and estimated recreational catch and commercial catch rates from the red rock lobster fishery to estimate changes in biomass and maximum sustainable yield. There is uncertainty in the historical reported catch (Figure 6). It is likely that these catches were under reported at times.

65. The 2019 vulnerable biomass (males and females of legal size that are vulnerable to the fishery) is estimated to be about 510 t which is 79.3% (range of 66% to 93%) of the biomass estimated in 1953 (Figure 7) and this is predicted to remain about the same over the next five year at current catch levels.

66. The maximum stainable yield is estimated to be 68.4 t (range 60 t to 77 t) and this can be sustained with the stock at or above 50% of the unfished biomass. A range of future catch scenarios were proposed and the model used to estimate the vulnerable biomass in 2024. These were based on increases to the TACC and 10 tonnes per year for recreational catch. These ranged from TACCs of 40.3 t (status quo) to 67 t. A TACC of 67 t and recreational catch of 10 t exceeds the modelled maximum sustainable yield (MSY) of 68.4 tonnes and is estimated to reduce biomass by 16% in the first 5 years.

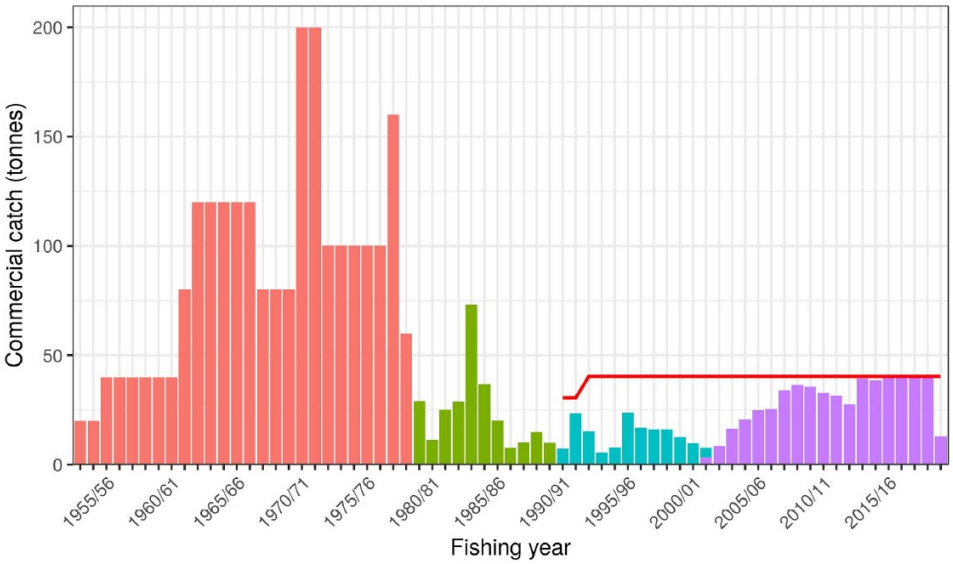


Figure 6: Packhorse commercial catch history used in the model. Colours refer to periods with different data collection forms, red line is the TACC.

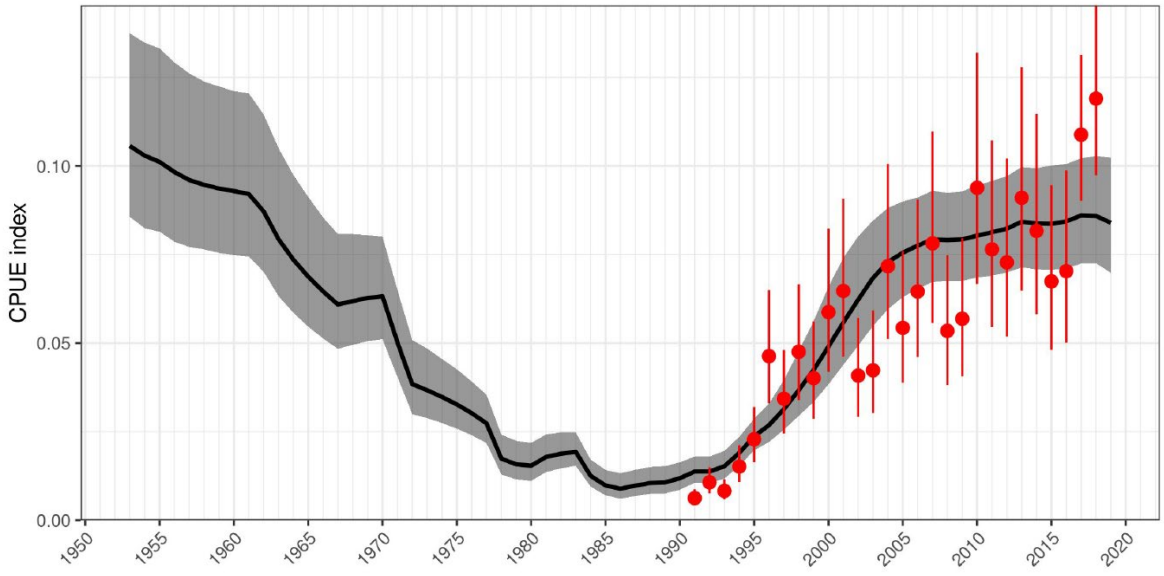


Figure 7: Packhorse cray stock assessment starts in 1953 fitted to commercial catch per unit effort (CPUE) when targeting red rock lobster (Red annual CPUE with confidence intervals)

Packhorse Management

67. Packhorse have one national Quota Management Area. A single tail length size limit of 216 mm applies for both male and female packhorse. There are a few (specialist) commercial fishers that target them as they aggregate for spawning in northern waters from October to January. About half the annual commercial catch is landed by the target fishery, the rest are landed as bycatch, or released if no Annual Catch Entitlement (ACE) is available.

68. This is the first review of packhorse quota since 1992 so allowances for customary and recreational fishing and other sources of fishing related mortality will be set for the first time.

69. The TACC has been 40.3 t since 1992 and has been fully caught in most years since 2013-14. The stock assessment assumed a recreational catch of 10 t based on the 2011-12 National Panel Survey estimate (9.8 t) and the 2013-14 access point survey in East Northland of 4.9 t (± 1.5 t). The later survey estimate was doubled to estimate catch for the whole area where packhorse rock lobster is commonly caught. Recreational catch of packhorse has increased in recent years as abundance has increased and fishers in the Hauraki Gulf and Bay of Plenty encountered them more often.

70. The estimate of maximum sustainable yield of 68.4 t is based on catch by recreational and commercial fishers only. Option P.2 is the only proposed management that allows for an increase in the TACC and a realistic allowance for recreational fishing interests without exceeding 68.4 t.

71. **The submitters support option P.2 with a TAC of 79.3 tonnes** increasing the Total Allowable Commercial Catch (TACC) by 22% to 49.3 tonnes, setting the allowance for Maori customary fishing at 10 t, setting a recreational allowance of 15 t, and setting the allowance for other sources of mortality at 5 t.

Other relevant matters

Biological and environmental factors

72. The submitters are concerned that in some areas where rock lobster have been over fished maintenance of catch is dependent on annual recruitment of young crays, leaving few large crays to provide ecosystem services and boost egg production. The Environmental Principles of the Fisheries Act 1996, including maintaining biological diversity, must be given more attention when setting management measures and sustainable targets.

Proposed future consultations

73. The most critical consultation process that needs to be started in 2021 is about what to do with the reference levels that the Rock Lobster Working Group have accepted, and how these relate to a management target that stakeholders can agree on for a QMA.

74. The submitters support progressing consultation on reviewing the minimum legal size (MLS) regime for red rock lobster in CRA 3 with the goal of aligning the MLS for commercial and recreational fishers. As stated above, we have long held the view that the tail width MLS must be reinstated at 54 mm for all fishers.

75. The submitters support starting the consultation process to change the packhorse rock lobster MLS from tail length to tail width.

76. No doubt there will be an ongoing discussion about recording or estimating rock lobster catch by amateur fishers. To date, dedicated onsite or offsite surveys are required to collect unbiased information. A recent presentation to the Marine Amateur Fisheries Working Group trialled self-reporting by fishers who had participated in the year-long 2017-18 National Panel Survey. The

surveys run by experienced professionals at NRB found that fishers reporting to an online link under reported catch, and when reporting to a phone app monthly fishing effort was much higher and catch estimates where double what they were in the National Panel Survey. Whether this was due to misreporting or just self-selection bias of fishers that maintained an interest in reporting catch is not clear. It could be a bit of both.

77. If reporting systems for non-commercial catch were easy to set up we would expect to have accurate information on amateur charter-fishing vessels catch, customary catch and section 111 landings by now. If this data is accurate now, why is it not being used?

78. A discussion and consultation about establishing accumulation limits for non-commercial rock lobster fishers are worth having. This could be included in the consultation process on rock lobster management targets.

79. The submitters are not convinced about the utility widespread use of telson clipping by non-commercial fishers. There are reports of it being useful in Kaikoura which has quite a focused rock lobster fishery and retail market. Our requests for reports supporting those claims by FNZ have so far been ignored.

80. Despite our objections and alternative strategies offered, telson clipping was introduced in CRA 2 in 2020. We are yet to see how telson clipping functions and any changes in behaviour in populated areas such as the Hauraki Gulf and Bay of Plenty (CRA 2).

81. There have been problems with the way a few amateur fishing charter fishers have operated and reported when targeting rock lobster, but the submitters know that this is a minority. The majority of charter operators want to look after their clients and the fishery. The submitters are not convinced that sweeping changes to how charter vessels operate are warranted or fair.