



Fisheries New Zealand

Tini a Tangaroa

Review of Sustainability Measures for Kina (SUR 1A, SUR 1B) for 2019/20

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1 Stocks being reviewed

Kina (SUR 1A, SUR 1B)

(*Evechinus chloroticus*; kina, sea urchin)

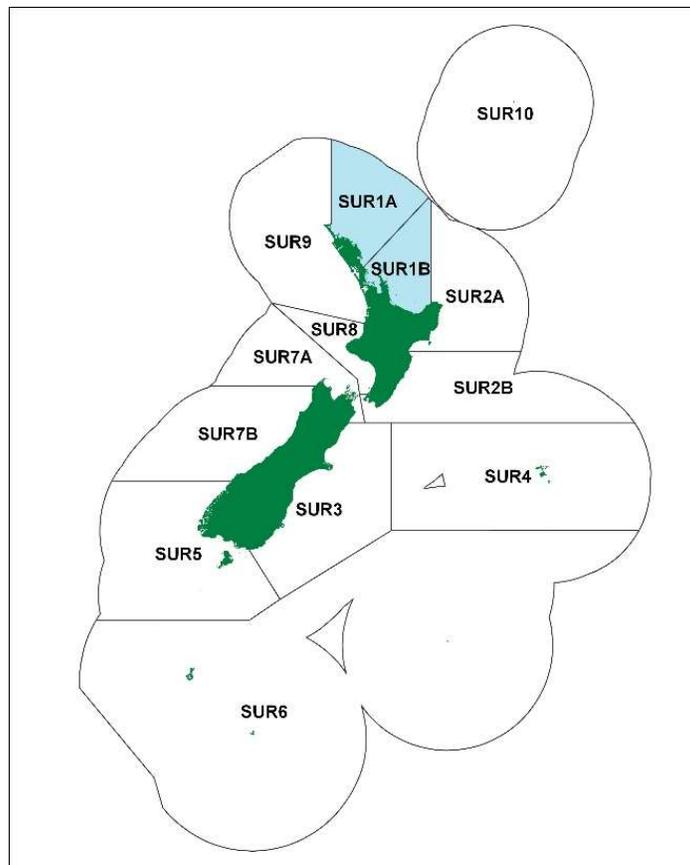


Figure 1: The Quota Management Area (QMA) for SUR 1A and 1B

2 Summary

Kina is a shared fishery important to customary, recreational and commercial fishers. Catch limits and allowances for the north-east stocks SUR 1A and SUR 1B have not been reviewed since kina (SUR) was introduced into the Quota Management System in 2003. Commercial catches of kina within SUR 1A and SUR 1B have remained high under these settings, and information from fishers and other stakeholders (including local area surveys) suggests abundance is high and increasing, in some areas to the point where it is having an impact on other species (for example, creating kelp 'barrens').

Under these circumstances there may be an opportunity to provide for increased utilisation. However, determining the stock status for sedentary species such as kina is difficult, as information about abundance or catch rates has not in the past been available at a sufficiently fine scale.

Fisheries New Zealand is currently rolling out new digital technologies for the tracking, reporting, and monitoring of commercial fishing. The use of digital monitoring means that fine scale information on kina catch and effort will become available from the end of this year. Fisheries New Zealand is seeking feedback and submissions on whether increases to the Total Allowable Catches for SUR 1A and SUR 1B should be considered in light of the new digital monitoring regime.

The combined Total Allowable Catch (TAC) of the two stocks is currently 496 tonnes, of which 180 tonnes is the combined Total Allowable Commercial Catch (TACC). Three options are proposed for each stock:

Option 1 is to maintain the status quo – no increases.

Option 2 is a 20% increase to the TAC, TACC and allowances, and provides for a modest increase in catch.

Option 3 is a 50% increase to the TAC, TACC and allowances and provides for the greatest increase in catch.

Option 1 takes account of the experiences of sea urchin fisheries in other parts of the world, where depletion and overfishing has occurred. It is a cautious approach, which would defer increased catches until digital monitoring has been implemented and finer scale information is available to better understand the status of the stocks.

The level of increase under Option 2 is unlikely to carry a significant sustainability risk, given commercial catches have been stable over the past 16 years (and are reportedly constrained by the TACC), and will be monitored at a fine scale under the digital monitoring programme.

The sustainability risk associated with Option 3 is higher. However, as for Option 2, catch limits would be adjusted in future if fine scale catch monitoring or other information suggests this is appropriate.

As there is little information on the spatial patterns of non-commercial fishing for kina, the impacts of catch limit increases will be harder to detect and characterise than commercial fishing. Fisheries New Zealand is seeking input and feedback on how the increases might impact across all sectors.

Wider environmental impacts of an increase in catches are expected to be low, given kina are generally taken in this area by hand while diving. Hand gathering is generally considered to be a low impact harvesting method. Fishers and stakeholders have also suggested potential benefits from increased harvesting, as in some areas the current densities of kina are impacting re-colonisation of seaweed, which can play an important role in the wider ecosystem.

3 Quota Management System

SUR 1A and 1B entered the QMS in 2003. At this time it was acknowledged that there would be benefits in managing kina catches at a finer scale than the standard fisheries management areas used for the majority of quota management stocks. The division between SUR 1A (East Northland) and SUR 1B (Hauraki Gulf/Bay of Plenty) provide a degree of finer scale management while still giving fishers flexibility to take their catches across a variety of locations. Initial catch limits were set cautiously, below the maximum historical recorded catches.

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

4 Legal basis for managing fisheries in New Zealand

The Fisheries Act 1996 provides the legal basis for managing fisheries in New Zealand, including the Minister's responsibilities for setting and varying sustainability measures. See the separate document *Overview of legislative requirements and other considerations* on the Fisheries New Zealand sustainability consultation webpage (<https://www.fisheries.govt.nz/news-and-resources/consultations/review-of-sustainability-measures-for-1-october-2019>) for more information.

5 Treaty of Waitangi obligations

5.1 Input and participation of tangata whenua

Input and participation into the sustainability decision-making process is provided through Iwi Fisheries Forums, which have been established for that purpose. Each Iwi Fisheries Forum has developed an Iwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interests in fisheries. Particular regard will be given to kaitiakitanga when making sustainability decisions.

Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.

The proposal to review SUR 1A and SUR 1B has been discussed with the Te Hiku o te Ika Fisheries Forum in the far North, Nga Hapu o te Uru Fisheries Forum in the Waikato/West Coast North Island and the Mai I Nga Kuri A Whareki Tihirau Fisheries Forum in the Bay of Plenty.

Kina is an important customary fisheries species, and some concerns were raised during discussions at the forums about the potential for localised depletion in the fishery. Mai I Nga Kuri A Whareki Tihirau Fisheries Forum reaffirmed that kina was a species of high importance, and noted that indications of commercial harvest had been seen at some of the local offshore islands. Forum members stated that they would not support an increase in commercial activity if it impacted the ability of locals to access kina.

Further input from these forums and tangata whenua across the north-east region is being sought during consultation and before final advice and recommendations are made.

5.2 Kaitiakitanga

Kina is identified in the Te Hiku O Te Ika Iwi Fisheries Forum Fisheries Plan as a taonga species.

Kina is also identified as a taonga species in the Mai I Nga Kuri A Whareki Tihirau Iwi Forum Fisheries Plan.

Fisheries New Zealand considers that the management options presented in this consultation paper are in keeping with the objectives of these plans, which generally relate to the maintenance of healthy and sustainable fisheries, but notes initial feedback from iwi has been mixed and seeks further input from iwi to help inform final advice on this review.

Table 1 lists the customary fisheries areas that fall within the quota management areas SUR 1A and SUR 1B.

Table 1: SUR 1A and SUR 1B customary fisheries

	Management type
SUR 1A	
Te Puna mataitai	Mataitai Reserve
Waikare Inlet taiapure	Taiapure
Maunganui Bay	186A temporary closure
Marsden Bank and Mair Bank	186A temporary closure
SUR 1B	
Te Maunga o Mau ao mataitai	Mataitai reserve
Maketu taiapure	Taipure

Commercial fishing is not permitted within mataitai reserves, but recreational and customary fishing is allowed. Section 186A temporary closures prevent recreational and commercial fishing, with the exception of the Maunganui Bay section 186A temporary closure which permits recreational and customary take of kina. At this point in time no taiapure in the two FMAs prohibit the harvest of kina.

6 Current state of the stocks

There is little genetic difference between kina that have been analysed in different parts of New Zealand, and the boundaries of the biological stock are unknown. Biological reference points and an accepted approach to assessing the status of the stock are also not available. Because information is limited, it is not known if current catch levels or management settings are sustainable, or if they are at levels which will allow the stocks to move towards a size that will support sustainable yields.

A 2002 report on sea urchin management (Andrew, 2002) and a characterisation of New Zealand kina fisheries (Miller & Abraham, 2011) recommended fine scale catch per unit effort monitoring of kina catch as the most effective and practical monitoring approach for New Zealand kina fisheries. The implementation of electronic catch and position monitoring means that this level of monitoring will begin this year.

7 Recent catch levels and trends

The best available information on the SUR 1A and SUR 1B stocks is from commercial reporting, which includes catch estimates, effort data and landing information. This information is currently provided at a general fisheries statistical area scale.

Figure 2, below shows that catch in SUR 1A and 1B has been at a relatively consistent level, with the respective TACCs constraining the total commercial harvest at or near 40 tonnes in SUR 1A and 140 tonnes in SUR 1B.

There is less information available about levels and trends in customary and recreational catches. The current allowances for customary and recreational fishing were set based on best available information of customary and recreational catch, when the fishery was included in the QMS in 2003.

Kina is an important customary fishery and catch is reported in some, but not all, areas of the stocks. Recreational catch is estimated based on the National Panel Survey of Marine Recreational Fishers undertaken in 2011/12 and 2017/18. However, this provides uncertain estimates for kina. The 2017/18 survey estimates approximately 75 tonnes of recreational catch across SUR 1A and SUR 1B.

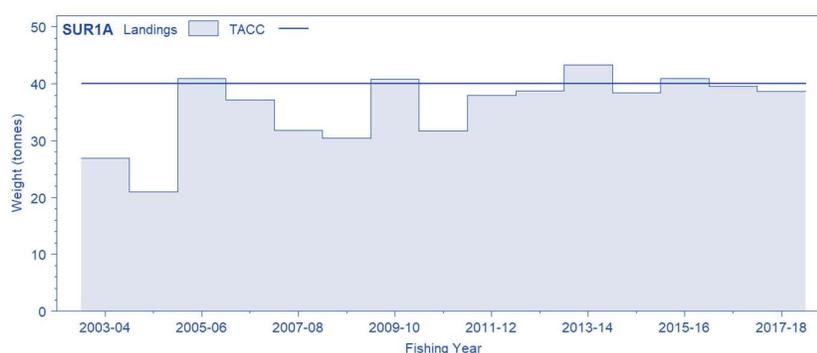


Figure 2: Landings for SUR 1A

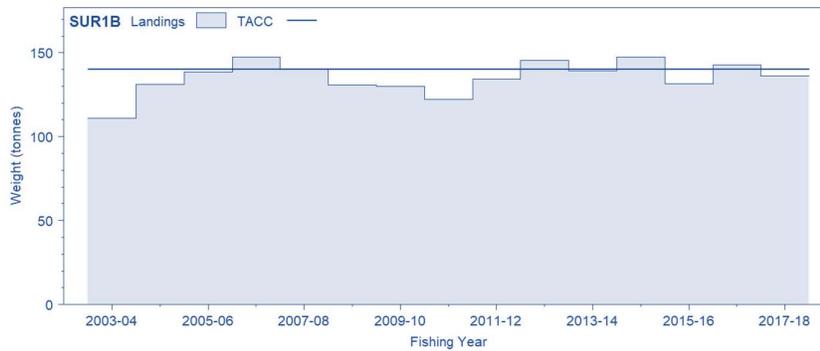


Figure 3: Landings for SUR 1B

As part of the roll out of electronic monitoring in New Zealand fisheries, work is currently underway to implement electronic reporting of catch, effort and landing information, as well as compulsory geospatial position reporting (GPR). By December 2019 all commercial operators will be required to report and submit electronic fishing reports on a daily basis and carry GPR devices on their vessels. This will provide improved information about the location and extent of fishing. Finer scale information provides an opportunity to improve monitoring of commercial catch per unit effort for kina, as discussed in the 2011 research report *Characterisation of New Zealand kina fisheries*. This should increase our understanding of how kina stocks are impacted by fishing over time. In the interim, commercial fishers have reported consistent catches and have put forward views that more kina could be taken sustainably.

8 Projections of biomass

Projections of biomass are currently unknown, given the limited information available on stock status.

9 Current TAC, TACC and allowances

Table 2: SUR 1A and SUR 1B current TAC, TACC and allowances

	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Maori	Recreational	All other mortality to the stock caused by fishing
SUR 1A	172	40	65	65	2
SUR 1B	324	140	90	90	4

10 Current other controls

Method restrictions apply to the commercial take of kina within SUR 1A and SUR 1B. Kina may only be taken for the purpose of sale using hand-gathering.

Within SUR 1B commercial take or possession of kina is specifically prohibited between Pokahinu point, Omaio and Cape Runaway. General spatial restrictions exist where all forms of fishing are prohibited.

The daily limit for recreational fishers is 50 kina per person per day.

11 Options – varying the TAC and TACCs and allowances

Three options are proposed for the TAC, TACC and allowances for each stock. The options represent the general range of increases to catch settings being considered. Feedback is sought on these options, or alternatives within this range.

Table 3: Options for varying TAC and TACC

Stock	Option	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	Allowances		
				Customary Māori (tonnes)	Recreational (tonnes)	All other mortality to the stock caused by fishing (tonnes)
SUR 1A	Option 1 (<i>Status quo</i>)	172	40	65	65	2
SUR 1A	Option 2	206 ↑ (20%)	48 ↑ (20%)	78 ↑ (20%)	78 ↑ (20%)	2 ↑
SUR 1A	Option 3	259 ↑ (50%)	60 ↑ (50%)	98 ↑ (50%)	98 ↑ (50%)	3 ↑
SUR 1B	Option 1 (<i>Status quo</i>)	324	140	90	90	4
SUR 1B	Option 2	389 ↑ (20%)	168 ↑ (20%)	108 ↑ (20%)	108 ↑ (20%)	5 ↑
SUR 1B	Option 3	486 ↑ (50%)	210 ↑ (50%)	135 ↑ (50%)	135 ↑ (50%)	6 ↑

11.1 Total allowable catch

Option 1 is the status quo TAC of 172 tonnes for SUR 1A, and 324 tonnes for SUR 1B. Option 1 carries the least sustainability risk. This option puts the most weight on the uncertainty regarding the stock status of SUR 1A and 1B, and also recognises that there are examples of sea urchin fisheries in other parts of the world where depletion has raised significant concerns, and management action has been required to support recovery of the stocks.

Option 2 proposes to increase the TACs from 172 tonnes to 206 tonnes (SUR 1A) and 324 tonnes to 389 tonnes (SUR 1B), which is an approximate 20% increase. This option takes into account that commercial catches of kina have remained high and stable over the past 16 years, that information from fishers and other stakeholders (including small-scale surveys) suggests abundance is high and increasing, in some areas to the point where it is having an impact on other species such as kelp. It also takes into account that the commercial fishery will be monitored at a fine scale from this year, and that TACs would be reviewed again if this monitoring suggests this is appropriate.

Option 3 proposes to increase the TACs from 172 tonnes to 259 tonnes (SUR 1A) and 324 tonnes to 486 tonnes (SUR 1B), which is an approximate increase of 50%. This is the least cautious option and the sustainability risk associated with this option is higher, while noting that the commercial fishery will be monitored at a fine scale, and that TACs would be reviewed again if this monitoring suggests this is appropriate.

11.2 Allowances

Information about customary and recreational catches and all other mortality to the stock caused by fishing is uncertain.

Customary catches have been reported in both SUR 1A and SUR 1B in the last five fishing years. However the measurement of units vary (kilograms, number, sacks, bins and unspecified), which makes it difficult to estimate the total quantity reported. Assuming that reports with unspecified units refer to number of kina, the reports indicate up to approximately 5 tonnes per year in SUR 1A and up to 20 tonnes per year in SUR 1B. In any case, these figures will underestimate customary catch as reporting of customary catch is not currently mandatory across all quota management areas.

It is likely that many Māori customary fishers utilise the provisions under the recreational daily bag limit. The information on Maori customary harvest under the provisions made for customary fishing is limited due to large parts of the quota management areas not being gazetted under the Fisheries (Kaimoana Customary Fishing) Regulations 1998. Customary fishing authorisations in many parts of the quota management area would be issued under Fisheries (Amateur Fishing) Regulations 2013, where there is no requirement to report on authorisations.

The most reliable estimate of recreational harvest comes from the National Panel Survey of Marine Recreational Fishers 2017/18, which estimates that 296,104 kina were taken across SUR 1A and SUR 1B between 1 October 2017 and 30 October 2018. However, the amount of recreational fishing effort is likely to vary from year to year depending on factors such as weather, and the condition of the kina. The same survey methods were also undertaken in 2011/12, but the result in that year (an estimate of 2,018,810 kina taken) was considered highly uncertain.

A weight estimate is not available specific to recreational harvest of kina. The average commercial weight was estimated at approximately 250 grams in 2009. Assuming the kina taken by recreational fishers averaged 250 grams, the 2017/18 estimate translates to approximately 75 tonnes across SUR 1A and SUR 1B.

It is proposed to increase the customary and recreational allowances, proportional to the increase to the TACC under all options, on the basis that kina abundance and the availability of kina to non-commercial fishers has increased since 2003. The allowance for all other mortality to the stock is proposed to be adjusted in conjunction with the TAC increase (for SUR 1A Option 2 the change is 0.4 tonnes and is rounded down).

11.3 Total Allowable Commercial Catch

Under Option 1 for both SUR 1A and SUR 1B there will be no increase to the TACCs, which are reportedly constraining commercial catches. This option would not provide for any development of these fisheries.

SUR 1A

Under Option 2 the Total Allowable Commercial Catch would increase from 40 tonnes to 48 tonnes. Based on the reported port price (which does not reflect the total economic benefit), this increase may support an approximate increase in revenue of \$1,000 per year. Under Option 3 the Total Allowable Commercial Catch would increase from 40 to 60 tonnes. Based on the reported port price, this increase may support an approximate increase in revenue of \$2,500 per year.

SUR 1B

Under Option 2 the Total Allowable Commercial Catch would increase from 140 to 168 tonnes. Based on the reported port price this increase may support an approximate increase in revenue of \$27,000 per year. Under Option 3, the Total Allowable Commercial Catch would increase from 140 tonnes to 210 tonnes. Based on the reported port price, this increase may support an approximate increase in revenue of \$67,000 per year.

Fisheries New Zealand is aware that kina industry representatives consider that a greater increase could be supported by the stocks and would allow for further development of the fishery and markets. However, given current information Fisheries New Zealand supports a relatively cautious approach at this time.

Table 4: Predicted changes to commercial revenue for the proposed options, based on recommended port prices of \$0.13/kg for SUR 1A, and \$0.96/kg for SUR 1B in the 2019/20 fishing year.

Stock	Option	Change from current setting (t)	Predicted revenue changes (\$p.a.)
1A	Option 1 (status quo)	NA	NA
1A	Option 2	8↑	\$1,021.34↑
1A	Option 3	20↑	\$2,553.34↑
1B	Option 1 (status quo)	NA	NA
1B	Option 2	28↑	\$26,861.17↑
1B	Option 3	70↑	\$67,152.93↑

12 Uncertainties and risks

There is currently limited information available about location, effort and amount of catch, and no quantitative estimates of abundance levels and impacts at the scale of the SUR 1A or SUR 1B quota management area.

Monitoring of fishing activity will improve with the introduction of digital monitoring, but will not provide as robust information as fisher-independent surveys (which are generally cost-prohibitive for kina stocks).

An international review of sea urchin fisheries completed in 2002 (*Andrew et al*) noted a history of depletion around the world, including in Chile (which supports the largest sea urchin fishery), France and parts of the United States. These experiences support a cautious approach to management.

13 Environmental interactions

In the North Island kina are harvested by hand-gathering. The method is highly selective and there is no by-catch of any associated or dependant species.

The key environmental interactions with the kina fishery, which must be taken into account when considering sustainability measures are:

Marine mammals, fish bycatch and seabirds

There are no known interactions with marine mammals, fish bycatch or seabirds.

Biological diversity

Kina play a role in the dynamics of the biological community structure of coastal reef systems. The 'barrens habitat', comprising a characteristic flora and fauna usually within a particular depth zone of less than 12m, is maintained by high densities of kina populations, and results in different assemblages of seaweeds, invertebrates and fish life.

A reduced number of kina in an area, as a result of harvest activities or the influence of other natural events (such as disease), is likely to result in a re-colonisation of seaweeds that will subsequently affect the assemblage of species co-existing with it. The effect of this change would vary depending on latitude, depth and exposure to wave action. Harvesting regimes that might significantly affect kina densities might also have impacts on biodiversity, although these relationships are complex and not well understood. Under differing circumstances, biodiversity might either decrease or increase.

Similarly, the role that kina play in facilitating the creation or maintenance of habitats of particular significance to fisheries management is unknown. There is likely to be a range of interacting ecological processes that generally affect the prevalence of such habitat.

14 Questions for submitters on options for varying TACs, TACCs and allowances

- Which option(s) do you support for revising the TACs and allowances? Why?
- If you do not support any of the options listed, what alternative(s) should be considered? Why?
- Are the allowances for customary fishing appropriate? Why?
- We ask tangata whenua to provide any additional information you may have on customary catch.
- Are the allowances for recreational fishing appropriate? Why?
- Are the allowances for other sources of mortality appropriate? Why?
- What other management controls should be considered for both recreational and commercial fishers? Why?

Please provide detailed, verifiable information and rationale to support your views.

15 Deemed values

The current annual deemed value rate for SUR 1A and SUR 1B is \$1.70 per kg, which is higher than the surveyed port price. However, the port price information is uncertain and likely to vary. Further, as kina can only be taken commercially using hand gathering in these stocks, and can also be returned to the sea under the Sixth Schedule of the Act, it is appropriate to have a deemed value setting that provides a strong incentive not to harvest in excess of Annual Catch Entitlement. Ramping of the port price occurs at intervals of 20% up to a maximum rate of \$3.40/kg. Fisheries New Zealand does not propose any changes to the deemed values for SUR 1A or SUR 1B.

16 Referenced reports

Andrew, N. (2000). Sea urchin fisheries: their status and management with special reference to the New Zealand kina fishery. Unpublished report prepared for the Ministry of Fisheries and Te Ohu Kaimoana.

Andrew et al, (2002) Status and Management of world sea urchin fisheries.

Miller, S.L.; Abraham, E.R. (2011). Characterisation of New Zealand kina fisheries

New Zealand Fisheries Assessment Report 2011/7

Fisheries Assessment Plenary May 2019: <https://www.fisheries.govt.nz/news-and-resources/science-and-research/fisheries-research/>

17 How to get more information and have your say

Fisheries New Zealand invites you to make a submission on the proposals set out in this discussion document. We must receive your submission by 5pm on 26 July 2019. Please see the Fisheries New Zealand sustainability consultation webpage (<https://www.fisheries.govt.nz/news-and-resources/consultations/review-of-sustainability-measures-for-1-october-2019>) for related information, a helpful submissions template, and information on how to submit your feedback. If you cannot access the webpage or require hard copies of documents or any other information, please email FMSubmissions@mpi.govt.nz.