



**Fisheries New Zealand**

Tini a Tangaroa

# **Review of Sustainability Measures for Gemfish (SKI 3 and 7) for 2019/20**

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# 1 Stocks being reviewed

Gemfish (SKI 3 & SKI 7)

(*Rexea solandri*; Maka-tiaki)

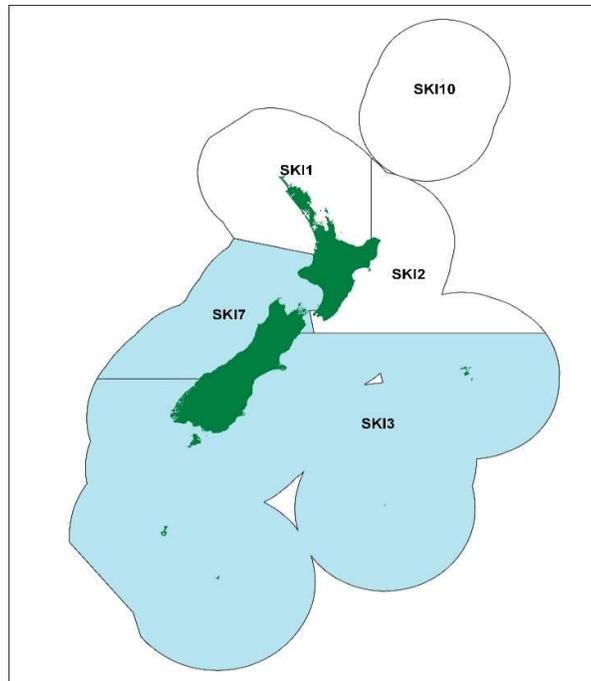


Figure 1: Quota management areas (QMAs) for southern gemfish (SKI 3 and SKI 7)

## 2 Summary

The best available information strongly suggests that the biomass of gemfish in both SKI 3 and SKI 7 has increased considerably since 2016/17 due to above average recruitment. The information suggests that an increase in catch limits would not be likely to cause the stock to decline in the short term. Fisheries New Zealand proposes to increase the total allowable catch (TAC) and total allowable commercial catch (TACC) for SKI 3 and SKI 7 as follows:

### SKI 3:

Option 1: Increase the TAC from 300 tonnes to 455 tonnes, and the TACC from 300 tonnes to 450 tonnes

or

Option 2: Increase the TAC from 300 tonnes to 606 tonnes, and the TACC from 300 tonnes to 600 tonnes.

**SKI 7:** Increase the TAC from 300 tonnes to 606 tonnes, and the TACC from 300 tonnes to 600 tonnes.

## 3 Quota Management System

All gemfish stocks are managed through the Quota Management System (QMS), with a 1 October to 30 September fishing year. 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 sustainability processes is provided through Iwi Fisheries Forums which have been constituted for that purpose. Each Iwi Fisheries Forum has developed an Iwi Fisheries Forum Plan which 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. The Minister must have particular regard to kaitiakitanga when making sustainability decisions.

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

Information on the proposal to review the TAC and TACC for SKI 3 and SK 7 was provided to a number of Iwi Forums, but no specific input was received.

### 5.2 Kaitiakitanga

Te Tai Hauāuru Iwi Fisheries Forum and Te Waka a Māui me Ōna Toka (Te Waka a Māui) Iwi Forums represent iwi with an interest in the two fish stocks. Iwi Forum Fisheries Plans contain objectives to support and provide for the interests of the relevant iwi. Te Tai Hauāuru Iwi Fisheries Plan provides specific objectives in respect of commercial fisheries, that commercial fisheries are sustainable and support economic well-being of their iwi, and that the value of Annual Catch Entitlement is stable or increasing.

Although not explicitly listed as a taonga species in the Iwi Fisheries Plan, Te Waipounamu iwi regard all fish species as taonga species.

There is no recorded customary harvest for these fish stocks, although information on customary harvest is likely to be incomplete.

## 6 Relevant plans, strategies, statements and context

Gemfish in SKI 3 and SKI 7 are managed as a Tier 2 species within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 – Part 1A (National Deepwater Plan). Tier 2 species are typically smaller or less valuable bycatch fisheries, are only target fisheries at certain times of the year and/or are important bycatch from Tier 1 stocks.

The National Deepwater Plan sets out a series of management objectives for deepwater fisheries, the most relevant to SKI 3 and SKI 7 being:

**Management Objective 1:** Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations

**Management Objective 4:** Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points

There are no other plans, strategies or statements relevant to gemfish in SKI 3 or SKI 7.

## 7 Current state of the stocks

Gemfish are bottom-dwelling fish found over the continental shelf and slope around the coastline of New Zealand in waters between 50 metres and 550 metres in depth. Gemfish in SKI 3 and SKI 7 are considered to form one biological stock, which migrates from southern areas (SKI 3) to the West Coast of the South Island (SKI 7) to spawn in August and September. Gemfish grow rapidly, attaining a length of approximately 30 cm at the end of the first year and growing to around 63 cm at the end of the fourth year. They are thought to have a maximum age of around 10 years.

The default reference points set out in the Harvest Strategy Standard (Table 1) are used to inform the setting of the TAC and TACC for SKI 3 and SKI 7, when information on the status of the stock in relation to reference points is available.

**Table 1: Gemfish default reference points, and the associated management response**

Reference point	Management response
Management target 40% unfished biomass ( $B_0$ )	Stock permitted to fluctuate around this management target. TAC/TACC changes will be employed to keep the stock around the target (with a 50% probability of being at the target)
Soft limit of 20% $B_0$	A formal, time constrained rebuilding plan will be implemented if this limit is reached
Hard limit of 10% $B_0$	The limit below which fisheries will be considered for closure

A preliminary stock assessment of the southern gemfish biological unit (comprising SKI 3 and SKI 7) was conducted in 2019. The stock assessment was presented to, and evaluated by, the Fisheries New Zealand Science Deepwater Working Group. This incorporated standardised catch per unit effort (CPUE) indices (Figure 2, below), observer-derived length composition data, and fisheries-independent data sets from research trawl surveys (Figure 3, below).

The Working Group considered there was sufficient information available from trawl surveys and commercial fisheries to conclude that there has been a considerable increase in stock abundance in recent years. The increase in abundance is likely due to strong 2014, 2015 and 2016 year classes recruiting to the fishery. Given this recent strong recruitment, the Working Group considered that the size of the stock is likely to continue to increase over the next 1-3 years. Because of the short life span of this species, utilisation of these strong year classes will be lost to natural mortality if not taken over the next few years.

However, the Working Group considered that the stock assessment model was not sufficiently reliable to provide estimates of current biomass and/or stock status.

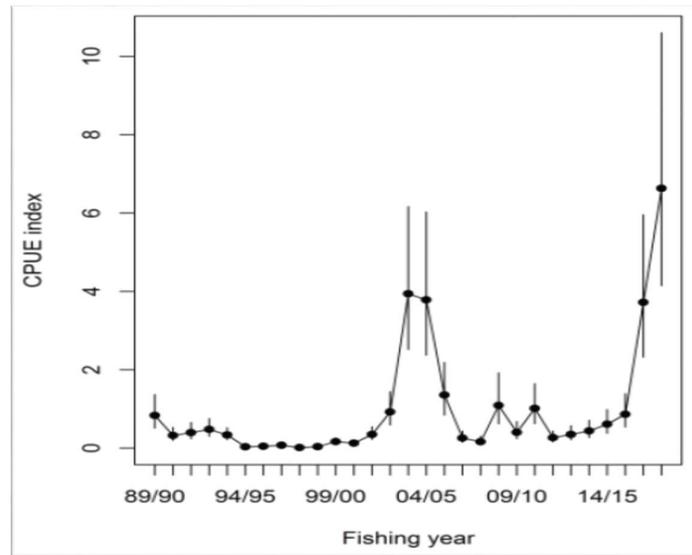


Figure 2: Standardised catch per unit effort of gemfish from the West Coast South Island (WCSI) hoki fishery between the 1989/90 and 2017/18 fishing years. Error bars represent 95% confidence intervals.

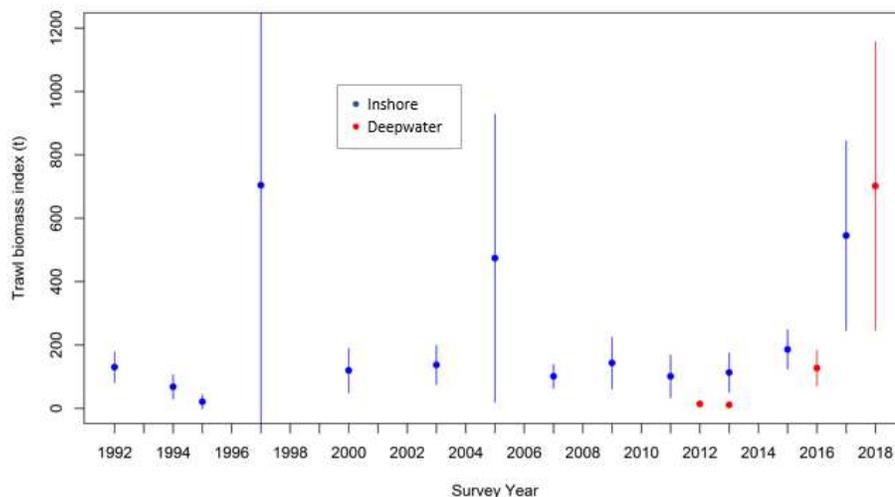


Figure 3: Relative gemfish biomass estimates from inshore and deepwater West Coast South Island trawl surveys between 2012 and 2018 (four surveys). Error bars represent uncertainty based on reported coefficient of variations (CVs).

The offshore trawl survey is conducted over the main distribution of gemfish and is considered to best monitor the adult component of the gemfish stock. The inshore trawl survey provides a longer time series and shows a similar significant increase in the most recent three years.

## 8 Recent catch levels and trends

Gemfish in SKI 3 and SKI 7 are principally taken as bycatch in commercial trawl fisheries by large (over 28 m) vessels targeting species such as squid on the Stewart Snares Shelf or hoki off the West Coast of the South Island. Smaller quantities of gemfish from both stocks are taken as bycatch in other middle-depth fisheries, or by small vessels targeting inshore species such as tarakihi. Although predominantly a bycatch species, targeted fishing for gemfish has occurred historically, and small quantities (less than 20 tonnes per annum) are currently taken from targeting by small trawl vessels in SKI 7.

There is currently a negligible level of recreational or customary take of gemfish in SKI 3 and SKI 7, with an estimated less than 200 kg taken per year from the most recent survey of recreational fishers.

Historically, up to 7,000 tonnes of gemfish were taken annually from SKI 3 and SKI 7 combined, both as bycatch and as a target species. Catches declined substantially from the mid-1980s onwards, with the TACCs of both stocks reduced to 300 tonnes in the mid-1990s. Between the mid-1990s and 2015/16, landings of gemfish from both SKI 3 and SKI 7 generally remained below the TACC.

Consistent with the increase in stock abundance, catches from both stocks have increased noticeably since the start of the 2016/17 fishing year (Figure 4). As landings exceeded the available annual catch entitlement (ACE) by considerable margins, both stocks incurred substantial deemed value payments during the 2017/18 fishing year (\$263k and \$591k for SKI 3 and SKI 7 respectively).

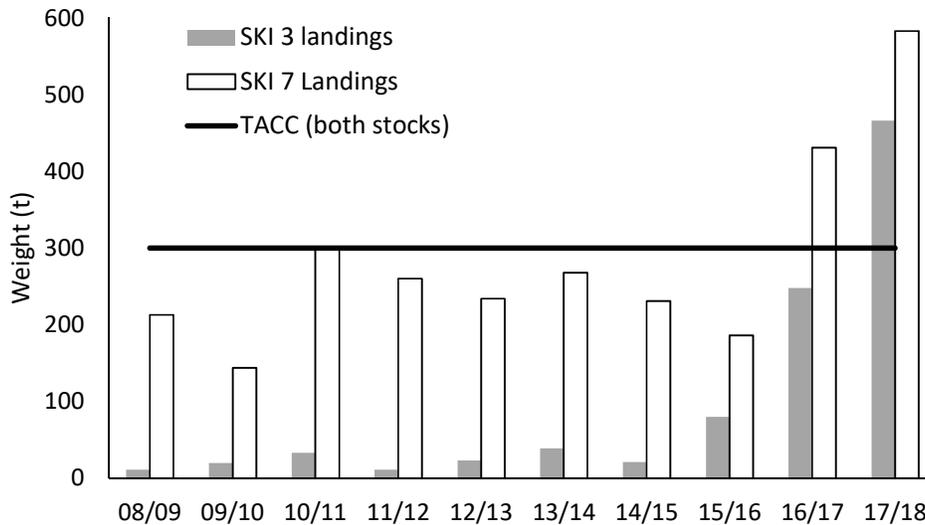


Figure 4: Landings of gemfish from SKI 3 and SKI 7 and the TACC between the 2008/09 and 2017/18 fishing year

Data from the current (2018/19) fishing year indicates that the trend of increased CPUE of gemfish (SKI 3) in the squid fishery has continued, with SKI 3 landings (as of April 2019) 42% higher than at the same stage in 2017/18. Therefore, it is highly likely that the 2018/19 catch of SKI 3 will exceed the catch from 2017/18.

As the majority of the SKI 7 catch is typically taken between June and September, SKI 7 catch data from the current (2018/19) fishing year is not available at the time of writing.

## 9 Projection of biomass

Both the length frequency composition from the most recent West Coast South Island trawl survey, and observer samples from recent fishing years show that three consecutive gemfish year classes have recruited to the commercial fishery (Figure 5, below). Given recent strong recruitment, the Deepwater Working Group estimates that stock size is likely to increase over the next 1-3 years and that future catches at 2017/18 levels are unlikely to result in a gemfish biomass reduction over the short term.

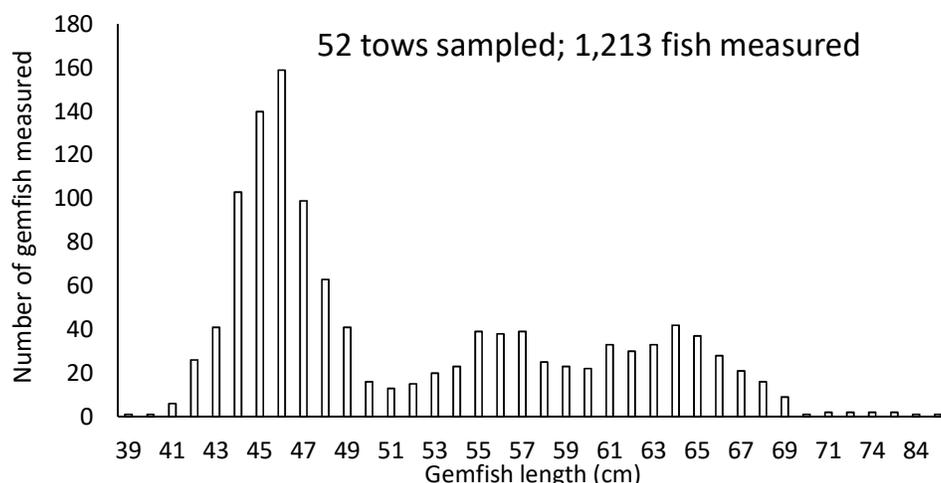


Figure 5: Length frequency composition of gemfish (SKI 3) taken as bycatch in the Stewart/Snares squid fishery (SQU 1T) during the current (2018/19) fishing year (includes all data received by Fisheries New Zealand as of May 2019).

Fish between 43 cm and 48 cm likely represent the 2016 year class, fish between 54 cm and 58 cm likely represent the 2015 year class, and fish between 61 cm and 67 cm likely represent the 2014 year class.

## 10 Options – Varying the TAC and TACC

Table 2 shows the proposed TAC, TACC and allowances in tonnes for SKI 3 and SKI 7 from 1 October 2019, with the percentage change relative to the current settings in brackets.

The best available information suggests there is a negligible level of recreational or customary take of gemfish in SKI 3 and SKI 7. Therefore, Fisheries New Zealand proposes retaining a zero tonne allowance for these sectors under all options.

Fisheries New Zealand proposes the introduction of an allowance for all other sources of mortality caused by fishing to account for unreported gemfish mortality (such as escape through trawl mesh). There is no information available to quantify all other mortality to the stock caused by fishing, so Fisheries New Zealand proposes setting this allowance at 1% of the TACC based on the allowance established for hake, which is a similar fishery.

Table 2: Proposed TACs, TACCs and allowances (in tonnes) for SKI 3 and SKI 7 from 1 October 2019.

Stock	Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
				Customary Māori	Recreational	All other mortality to the stock caused by fishing
SKI 3	Status quo	300	300	0	0	0
	Option 1	455 ↑ (52%)	450 ↑ (50%)	0	0	5 ↑
	Option 2	606 ↑ (106%)	600 ↑ (100%)	0	0	6 ↑
SKI 7	Status quo	300	300	0	0	0
	Option 1	606 ↑ (106%)	600 ↑ (100%)	0	0	6 ↑

# 11 Analysis of options for varying the TAC, TACC and allowances

## 11.1 SKI 3

Option 1 is to increase the SKI 3 TAC by 52% from 300 tonnes to 455 tonnes, and the TACC from 300 tonnes to 450 tonnes. A new allowance of 5 tonnes would be set for other mortality related to fishing.

This option reflects the catch levels in SKI 3 in the 2017/18 fishing year. The Deepwater Working Group considered that the stock size is likely to increase over the short term, but considered that catches at current levels are unlikely to result in a reduction of biomass over the next 1-3 years.

Option 1 would be unlikely to result in an increase in effort or catch of SKI 3, but would alleviate deemed value payments that were \$263,000 for SKI 3 in the 2017/18 fishing year.

There is little targeting of gemfish in SKI 3, therefore Fisheries New Zealand considers it unlikely that Option 1 would result in an increase in the level of commercial fishing effort targeting gemfish. As such, the environmental impacts of the proposed TACC increase are likely to be negligible.

Option 2 is to increase the SKI 3 TAC by 106% from 300 tonnes to 606 tonnes and the TACC from 300 tonnes to 600 tonnes. A new allowance of 6 tonnes would be set for other mortality related to fishing.

This option reflects predicted catch levels in SKI 3 in the 2018/19 fishing year. Current data indicates that SKI 3 catches are 42% higher than they were at this time in the 2017/18 fishing year, and therefore it is expected that the total catch for the 2018/19 fishing year will be nearly 600 tonnes. The Deepwater Working Group did not comment on the likely effect of catches above 2017/18 levels.

Option 2 will provide for catch above 2017/18 levels, which could be worth an additional \$425,000 in export values (based on an export price of \$2.83/kg for frozen whole product). However, with the expected increase in catch in 2018/19, the actual impact of this option may not be additional export value, but only the alleviation of deemed value charges which were \$263,000 in 2017/18, and are expected to be approximately \$300,000 in 2018/19.

There is little targeting of gemfish in SKI 3, therefore Fisheries New Zealand considers it unlikely that the proposed increase to the TAC and TACC would result in a material increase in the level of commercial fishing effort targeting gemfish. As such, the environmental impacts of the proposed TACC increase are likely to be negligible.

## 11.2 SKI 7

Fisheries New Zealand presents a single option to increase the SKI 7 TAC by 106% from 300 tonnes to 606 tonnes, and the TACC from 300 tonnes to 600 tonnes. A new allowance of 6 tonnes would be set for other mortality related to fishing.

This option reflects the catch levels in SKI 7 in the 2017/18 fishing year. The Deepwater Working Group considered that the stock size is likely to increase over the short term, but considered that catches at current levels are unlikely to result in a reduction of biomass over the next 1-3 years.

Option 1 would be unlikely to result in an increase in effort or catch of SKI 7, but would alleviate deemed value payments that were \$591,000 for SKI 7 in the 2017/18 fishing year.

There is little targeting of gemfish in SKI 7, therefore Fisheries New Zealand considers it unlikely that the proposed increase to the TAC and TACC would result in an increase in the level of commercial fishing effort targeting gemfish. As such, the environmental impacts of the proposed TACC increase are likely to be negligible.

## 12 Uncertainties and risks

While the CPUE and trawl survey biomass indices reveal that stock abundance has increased considerably since 2016/17, the absolute magnitude of the recent biomass increase (in relation to historical levels) is difficult to calculate. While the increase in stock abundance has only been evident in recent years, recent strong recruitment suggests that stock size is likely to continue to increase over the next 1-3 years. The status of either stock in relation to the management target or to the soft limit, is unknown.

Additionally, catches from gemfish stocks in both New Zealand and Australia have shown a similar pattern over time; high initial biomass followed by a rapid decline after which biomass remained low and relatively stable. Such historical patterns suggest that some aspect of gemfish biology may lead to occasional large recruitment pulses which result in spikes in catches.

## 13 Preferential Allocation Rights (28N rights)

The proposal to consult on SKI 3 and SKI 7 was presented to Te Ohu Kaimoana. Te Ohu Kaimoana supported the proposed review of SKI 3 but did not support a review of SKI 7 as it considered the association of preferential allocation ('28N') rights with this stock would result in the degradation of the proportion of settlement quota if the TACC was increased.

There are 152.5 tonnes of preferential allocation ('28 N') rights associated with the SKI 7 stock. Under the proposed option, these rights would be discharged, in that the quota shares of owners who do not have 28N rights would be reduced and redistributed to the holders of 28N rights (in accordance with the formulas set out in section 23 of the Act). The effect on iwi quota holdings derived from the 1992 Fisheries Settlement would be to permanently reduce the proportion of the quota shares iwi hold in this fishery.

## 14 Deemed values

The purpose of deemed values are to provide incentives for commercial fishers to balance the catch of QMS species with ACE within each fishing year. The deemed value rates of both SKI 3 and SKI 7 were reviewed for the start of the 2018/19 fishing year. As the deemed value settings of both stocks are consistent with the Principles of the Deemed Value Guidelines, no changes are proposed to the deemed value rates of either stock. Please refer to the deemed values chapter for further information on the deemed value regime.

## 15 Questions for submitters on options for varying TACs, TACCs and allowances

- Do you support the proposed TAC and TACC adjustment? Why?
- If you do not support the proposed option, what alternative(s) should be considered? Why?
- Can you provide any relevant information to inform the provision of allowances for the customary and recreational take of gemfish in SKI 3 and SKI 7?

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

## 16 Referenced reports

[National Fisheries Plan for Deepwater and Middle-depth Fisheries 2019](#)

[Eastern Gemfish \(\*Rexea solandri\*\) Stock Rebuilding Strategy 2015. Australian Fisheries Management Authority](#)

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

[Harvest Strategy Standard for New Zealand Fisheries](#)

## 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](mailto:FMSubmissions@mpi.govt.nz).