

## Rig (SPO 7)

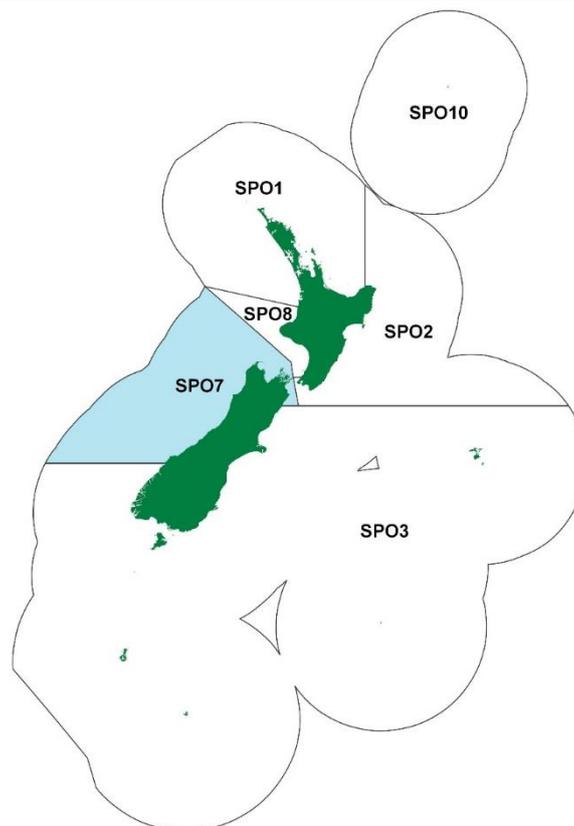


Figure 1: Quota Management Areas (QMAs) for rig (SPO), with SPO 7 highlighted in blue.

### 1. What is proposed?

875. Fisheries New Zealand is reviewing the total allowable catch (TAC), allowance for Māori customary fishing, allowance for recreational fishing, allowance for all other mortality to the stock caused by fishing, and the total allowable commercial catch (TACC) for rig (*Mustelus lenticulatus*; pioke; makō; mango) in the quota management area SPO 7, which covers the Challenger area and the West Coast of the South Island (see Figure 1). Fisheries New Zealand proposes that the following initial options be considered, and seeks information and views from tangata whenua and stakeholders (Table 1):

Table 1: Proposed management settings in tonnes for SPO 7 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 ( <i>Status quo</i> )	306	246	15	33	12
Option 2	332 ↑ (8%)	271 ↑ (10%)	15	33	13 ↑ (10%)
Option 3	357 ↑ (17%)	295 ↑ (20%)	15	33	14 ↑ (20%)

876. No changes are proposed to the deemed value rates for SPO 7. The interim deemed value rate for SPO 7 is currently set at 90% of the annual deemed value rate and as the current

interim and annual deemed value rates are consistent with the Deemed Value Guidelines,<sup>1</sup> no change is proposed as outlined in Table 2.

**Table 2: Standard deemed value rates (\$/kg) for SPO 7**

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<b>Status quo</b>	2.70	3.00	3.60	4.20	4.80	5.40	6.00

## 2. Why the need for change?

877. The best available information indicates that the abundance of rig in SPO 7 is continuing to increase, and that the biomass is likely to be at or above the target level. Therefore, Fisheries New Zealand considers that there is an opportunity to increase utilisation (increase the TAC) while ensuring sustainability of rig within SPO 7.

## 3. Background

### 3.1 BIOLOGICAL CHARACTERISTICS OF RIG

878. Rig mature late, with female rig attaining maturity at 5-6 years, and can live for 20 years or longer. Rig give birth to young during spring and summer following a 10-11 month gestation period. Most females begin a new pregnancy soon after the birth of the previous litter, and therefore breed every year. The number of young increases exponentially with the length of the mother, and can range from 2 to 37 (mean of approximately 11). Within SPO 7, large numbers of pregnant females are found in the Farewell Spit area over summer months.

879. Rig make extensive coastal migrations, with one tagged female moving at least 1160 km. Over half of recaptured tagged rig had moved over 50 km, and over half of the females had moved more than 200 km. Females travel further than males, and mature females travel further than immature females.<sup>2</sup>

880. Information relevant to determining rig stock structure in New Zealand was reviewed in 2009. This concluded that the boundaries between biological rig stocks are poorly defined, especially in the Cook Strait region. Biological links between the current management stocks will be investigated further in a project scheduled for later 2018.

### 3.2 NATIONAL PLAN OF ACTION FOR SHARKS (NPOA SHARKS)

881. In reviewing the available indices of relative biomass and reviewing the catch limits and allowances of rig in SPO 7 to ensure sustainable utilisation, Fisheries New Zealand is fulfilling several objectives of the National Plan of Action for Sharks (NPOA Sharks)<sup>3</sup>.

<sup>1</sup> Available at [www.mpi.govt.nz/document-vault/3663](http://www.mpi.govt.nz/document-vault/3663)

<sup>2</sup> Francis, M P (1988) Movement patterns of rig (*Mustelus lenticulatus*) tagged in southern New Zealand. *New Zealand Journal of Marine and Freshwater Research* 22: 259–272.

<sup>3</sup> The NPOA Sharks is accessible at: <https://www.mpi.govt.nz/dmsdocument/1138-national-plan-of-action-for-the-conservation-and-management-of-sharks-2013>. For more information on how Fisheries New Zealand manages sharks, see: <https://www.mpi.govt.nz/protection-and-response/sustainable-fisheries/managing-our-impact-on-marine-life/sharks/>

As an elasmobranch (cartilaginous fish, including sharks, skates, and rays), rig is included in the plan, which takes into account the biological characteristics of rig in terms of its vulnerability to fishing pressure and the connectivity of rig stocks.

882. One of the goals of the NPOA Sharks is to maintain the biodiversity and long-term viability of New Zealand shark populations based on a risk assessment framework. The risk assessment framework evaluates stock status, measures to ensure any mortality is at appropriate levels, and protection of critical habitat. Objectives of this goal that are met by the current review of rig in SPO 7 are:
- a. For shark species managed under the quota management system (QMS), undertake an assessment to determine the stock size in relation to  $B_{MSY}$  or other accepted management targets and on that basis review catch limits to maintain the stock at or above these targets;
  - b. Mortality of all sharks from fishing is at or below a level that allows for the maintenance at, or recovery to, a favourable stock and/or conservation status giving priority to protected species and high risk species; and
  - c. Ensure adequate monitoring and data collection for all sectors (including commercial, recreational, customary fishers, and non-extractive users) and that all users actively contribute to the management and conservation of shark populations.

### 3.3 FISHERY CHARACTERISATION

#### Customary Māori fishery

883. Rig (pioke, makō, and mango) is an important species for customary fishers, as it is widely distributed in shallow, easily accessible coastal waters. Mango is identified by the Te Waka a Māui me Ōna Toka Iwi Forum as a taonga species in the Te Waipounamu Iwi Fisheries Plan. This plan contains objectives to support and provide for the interests of South Island iwi.
884. Information currently held by Fisheries New Zealand on Māori customary catch, where SPO 7 was authorised to be taken, shows that there have been 43 confirmed customary permits since 1999, and seven permits between 2008 and 2016 where ‘finfish’ are authorised to be taken in FMA 7, which could include SPO 7.
885. The SPO 7 QMA is under two different regulations for customary catch, the Fisheries (South Island Customary Fishing) Regulations 1999 (the South Island Regulations) and the Fisheries (Amateur Fishing) Regulations 2013 (the Amateur Regulations). The South Island Regulations apply south of the Kahurangi River down the west coast of the South Island, while the Amateur Regulations apply for the remainder of SPO 7 along the top of the South Island.
886. For tangata whenua groups in SPO 7 under the South Island Regulations, there is a requirement for Tangata Kaitiaki/Tiaki to provide information on Māori customary harvest of fish. However, for those tangata whenua groups still operating under

regulations 50 and 51 of the Fisheries (Amateur Fishing) Regulations 2013 (the Amateur Regulations), it is not mandatory to report on permits issued or catch taken.

887. There are low levels of customary take of rig in SPO 7, with the majority of customary take of rig likely to be within the recreational rig catch allowance. There have been few customary authorisations for SPO 7 reported to Fisheries New Zealand in recent years, with less than half a tonne of customary take of rig in SPO 7 each year from 2008/09 to 2014/15 under the South Island Regulations. This may reflect that tangata whenua in the Tasman/Golden Bay and Marlborough Sounds area are still operating under the Amateur Regulations, or it may suggest that tangata whenua use of the customary fishing regulations to harvest SPO 7 is low at this time (e.g., tangata whenua in SPO 7 are using recreational bag limits to meet their needs for rig).
888. Consistent with the objectives of Te Waipounamu Iwi Fisheries Plan, Fisheries New Zealand is supporting and providing for the interests of South Island iwi by providing allowances that adequately allow for the utilisation of customary resources.
889. The taiāpure of Whakapuaka (Delaware Bay), and the mātaītai reserves of Okuru/Mussel Point, Tauperikaka, Mahitahi/Bruce Bay, Manakiaiaua/Hunts Beach, Okarito Lagoon, Te Tai Tapu (Anatori), and Te Tai Tapu (Kaihoka) are all within the SPO 7 quota management area. Fisheries New Zealand notes that the proposals in this paper are unlikely to impact on these taiāpure and mātaītai reserves.

### Recreational fishery

890. Rig is an important recreational species across New Zealand. The main recreational fishing method is rod and line, and the recreational daily bag limit for rig is 20 per person per day as part of a mixed species daily bag limit.
891. The National Panel Survey of Marine Recreational Fishers 2011/12<sup>4</sup> (NPS) provides the best available information on recreational harvest of rig in SPO 7. This survey estimated 20.8 tonnes of rig were caught in SPO 7 in the 2011/12 fishing year, the seventh highest species harvested (by number) in FMA 7. Fisheries New Zealand acknowledges that recreational harvest can fluctuate from year to year due to weather and other factors. While this estimate is uncertain because of the relatively small numbers of events and fishers it was derived from, it is well within the current recreational allowance of 33 tonnes.
892. A repeat of the 2011/12 NPS is currently underway in 2017/18, and updated estimates of recreational catch in SPO 7 will be used to inform future management.
893. There is support from recreational fishers for the compulsory attendance of set nets in some areas of FMA7, but recreational fishers have indicated that set net restrictions implemented to protect Hector's and Maui dolphins are preventing them from catching rig and other typical set net caught species. These same restrictions do not apply to commercial fishers in some of these areas, and recreational fishers have advocated for the same opportunity to catch rig by set net as for commercial fishers.

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<sup>4</sup> Wynne-Jones J, Gray A, Hill L, Heinmann A (2014) National Panel Survey of Marine Recreational Fishers 2011-2012: Harvest Estimates. New Zealand Fisheries Assessment Report 2014/67. 139p. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

894. Fisheries New Zealand is not currently proposing to change recreational set net restrictions.

### **Commercial fishery**

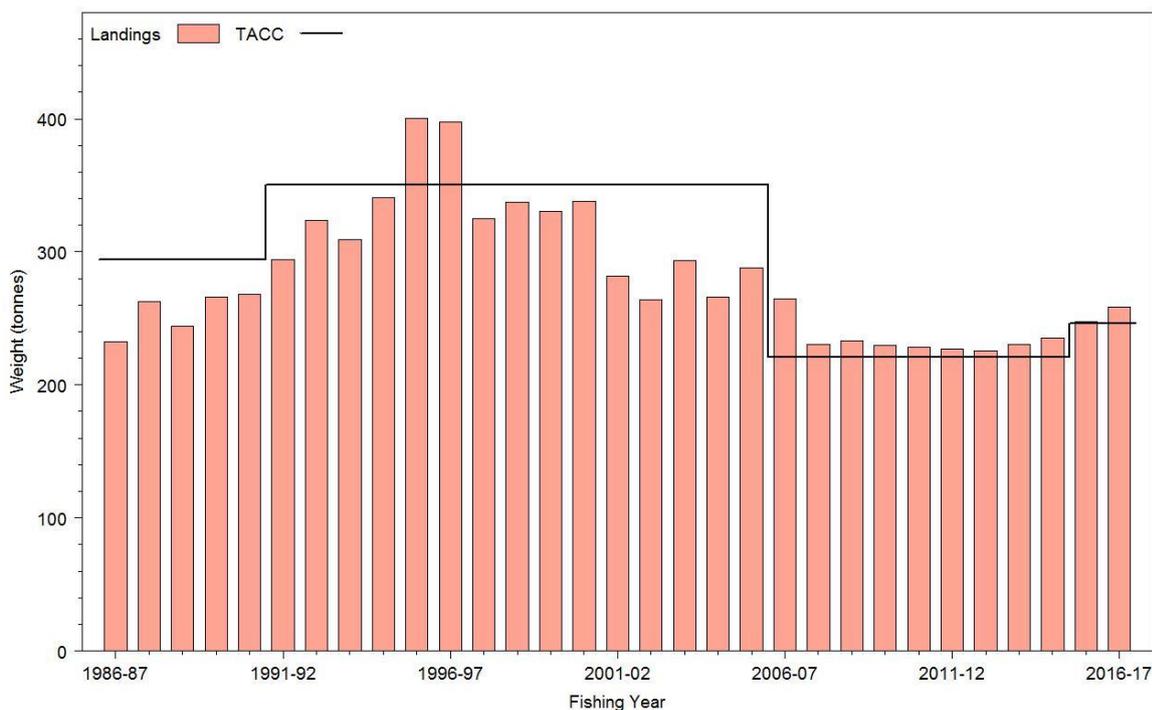
895. Rig are caught in coastal waters throughout New Zealand. Rig are mostly caught in waters less than 50 m deep when they aggregate inshore during spring and summer. Before the introduction of the QMS in 1986, 80% of the commercial catch was taken by set net, with the majority of the remainder taken by targeted trawl fishing. Total reported landings of rig increased rapidly during the 1970s and early 1980s, but since then targeted trawling for other species has led to rig being principally caught as bycatch in other fisheries.

896. Rig in SPO 7 is principally caught in a targeted set net fishery, which also includes other shark species such as school shark and spiny dogfish, and is also caught incidentally in the mixed inshore trawl fishery mainly targeting flatfish, red gurnard, red cod, and tarakihi, with the set net fishery being historically localised to the Tasman and Golden Bays, especially in the spring and summer period

897. In more recent years, commercial set net fishing activity targeting rig and other shark species has reduced relative to other fishing methods as a result of set net area restrictions implemented to protect Hector's dolphins. Since this closure, there has been a decline in the number of commercial set net specific vessels on the west coast of the South Island as much of the targeted rig fishery was within the restricted boundary during the summer months.

898. Following the introduction of rig to the QMS in 1986, and in response to the lower TACC, landings declined to less than half of those observed in the decade prior. The SPO 7 TACC was reduced from 350 to 221 tonnes for the 2006/07 fishing year when assessments indicated the stock was below target  $B_{MSY}$ . Following the WCSI trawl survey in 2015, and indications of increasing abundance of rig in SPO 7, the TACC was increased to 246 tonnes.

899. Since the TACC reduction in 2006/07 to support a SPO 7 stock rebuild, the reported landings of SPO 7 have consistently exceeded the TACC, although by relatively small volumes. Fisheries New Zealand notes that under Schedule 6 of the Fisheries Act, commercial fishers are permitted to return rig in SPO 7 to the water, given that the rig are likely to survive.



**Figure 2: Landings vs Total Allowable Commercial Catch (TACC) in tonnes for SPO 7 from 1986/87 to 2016/17.**

900. Currently, the commercial fishery appears to be constrained by the existing TACC. Annual catches and the TACC for SPO 7 since 1986/87 are shown in Figure 2 above. There are indications that the SPO 7 stock is rebuilding since the TACC was reduced from 350,221 tonnes in 2006/07. SPO 7 catch has exceeded the TACC each year since it was increased for 2015/16, incurring maximum deemed value costs of over \$33,467 in 2016/17 when the TACC was over caught by approximately 5%.

### 3.4 STATUS OF THE STOCK

#### Management target

901. The current management target for rig in SPO 7 is based on the relative biomass series from the west coast South Island (WCSI) research trawl survey<sup>5</sup>. The Fisheries Assessment Working Group considers the  $B_{MSY}$  proxy from this survey to represent the level of biomass that produces the maximum sustainable yield (MSY), and has been accepted as a management target for SPO 7. The  $B_{MSY}$  proxy for SPO 7 is twice the average biomass estimates for 2003 and 2005 (148.6 tonnes), a period when the stock was considered to be at the soft limit.

902. The Harvest Strategy Standard<sup>6</sup> defaults are used for the stock, where the soft limit is 50% and the hard limit is 25% of the  $B_{MSY}$  proxy. The soft limit for the SPO 7 WCSI trawl series is the average estimated biomass from 2003 to 2005 (148.6 tonnes). The hard limit for SPO 7 is 50% of the soft limit.

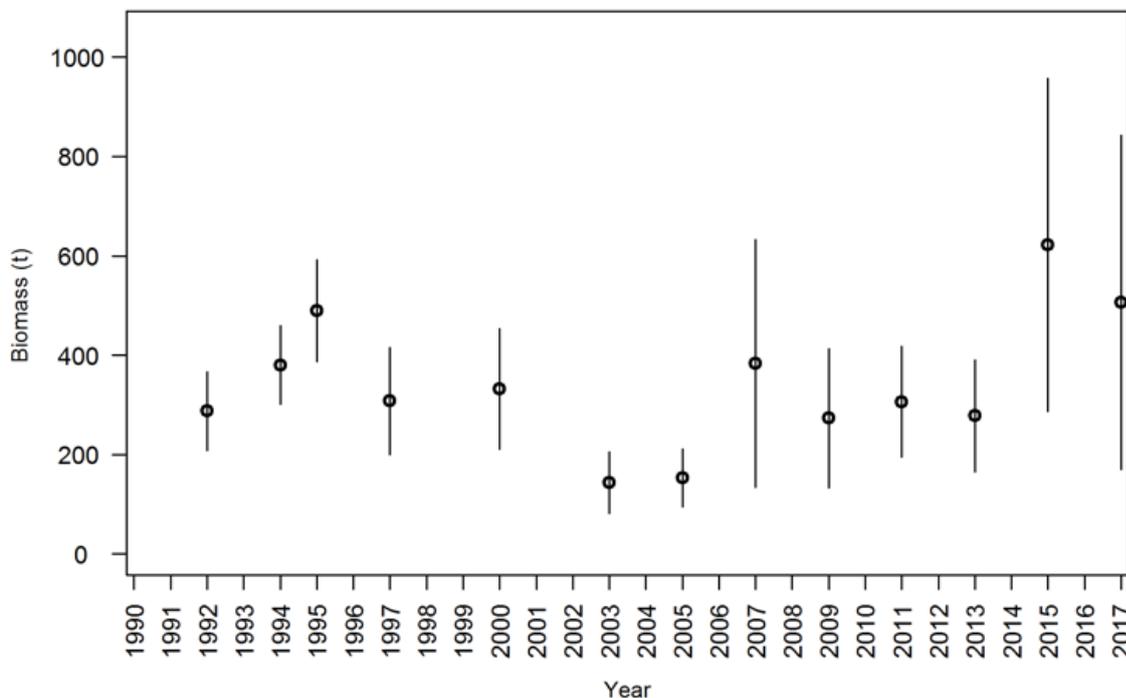
<sup>5</sup> The WCSI trawl survey biomass data series has been accepted by the Fisheries Assessment Working Group as a reliable index of relative abundance for males and younger females in SPO 7.

<sup>6</sup> Harvest Strategy Standard for New Zealand Fisheries, October 2008, accessible at: <http://fs.fish.govt.nz/Page.aspx?pk=113&dk=16543> The Harvest Strategy Standard is a policy statement of best practice in relation to the setting of targets and limits for New Zealand fishstocks managed under the quota management system (QMS).

903. The catch limits for rig in SPO 7 were last reviewed in 2015/16 when, based on the evidence of an increasing index of abundance from the 2015 WCSI research trawl survey, the TAC was increased from 270 to 306 tonnes and the TACC was increased from 221 to 246 tonnes. The customary non-commercial allowance (15 tonnes) remained unchanged, the recreational allowance was increased from 29 to 33 tonnes, and the allowance for all other mortality to the stock caused by fishing was increased from 5 to 12 tonnes. The biomass of rig in SPO 7 appears to have remained above the target since this review, and an opportunity for greater sustainable utilisation now exists.

### Status of the stock

904. Updated information in 2017 shows that the WCSI trawl survey relative biomass is well above the target level (Figure 3 and 4). The 2017 WCSI Relative Index (trawl survey biomass) for SPO 7 of 506 tonnes (Figure 2) is 1.7 times the target reference point of 297.2 tonnes (Figure 2 and 3; twice the soft limit of 148.6 tonnes). This corroborates the 2015 trawl survey biomass, which was the highest ever recorded in the series for both WCSI and Tasman/Golden Bays. The estimated biomass of rig in SPO 7 was the second highest for any survey in the series, down slightly from the time series high in 2015 (Figure 3).

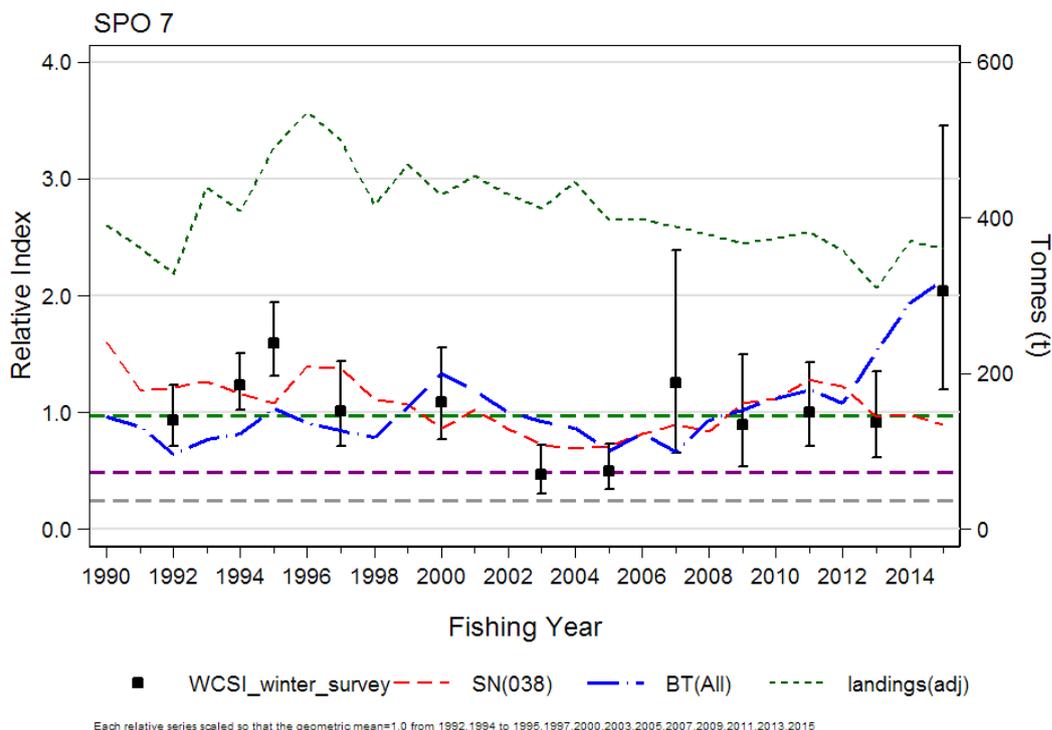


**Figure 3: Plots of biomass estimates (t) for rig from the west coast South Island trawl survey by year.<sup>7</sup>**

905. Two standardised catch per unit effort (CPUE) series are used to index the abundance of rig in SPO 7. One is the set net fishery in Statistical Area 038 (Tasman and Golden Bays) targeting rig, spiny dogfish and school shark (SN(038)). The second is the bottom trawl fishery in Statistical Areas 016–018, 032–037, 038, 039 and 040 (Cook Strait and West Coast South Island) targeting flatfish, red cod, rig, barracouta, tarakihi, gurnard, snapper, blue warehou, and trevally (BT(ALL)).

<sup>7</sup> Stevenson, M.L.; MacGibbon, D.J. (2018). Inshore trawl survey of the west coast South Island and Tasman and Golden Bays, March-April 2017 (KAH1703). *New Zealand Fisheries Assessment Report 2018/18*. 93 p

906. These two CPUE series demonstrate differing trends of relative abundance of rig in SPO 7 (Figure 4). The SN(038) CPUE of SPO 7 (Figure 3; red dashed line, left axis) has increased considerably since the mid-2000s, peaking in 2010/11 and decreasing since then. The reducing CPUE series for set net may be an outcome of netting restrictions in the region put in place to protect against capture of Hector's or Maui's dolphin.
907. In contrast, the BT(ALL) CPUE of SPO 7 (Figure 3; blue dash-and-dot line, left axis) shows an increasing trend since the mid-2000s, and since low points in 2004/05 and 2004/15 has increased by more than two times to reach the highest point in the series in 2014/15. The BT(ALL) CPUE series indicates current abundance of rig in SPO 7 is high, corroborating the WCSI trawl survey biomass estimates to 2015.



**Figure 4: Comparison of the West Coast South Island (WCSI) trawl survey and two accepted CPUE indices BT(All) and SN(038) with the adjusted QMR/MHR landings for SPO 7. The dashed green line represents the  $B_{MSY}$  proxy, and the dashed purple and grey lines represent the soft and hard limits, respectively.**

## 4. Why are these options proposed?

908. The options proposed for SPO 7 are given in Table 3 and discussed below.

**Table 3: Proposed management settings in tonnes for SPO 7 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.**

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 ( <i>Status quo</i> )	306	246	15	33	12
Option 2	332 ↑ (8%)	271 ↑ (10%)	15	33	13 ↑ (10%)
Option 3	357 ↑ (17%)	295 ↑ (20%)	15	33	14 ↑ (20%)

#### 4.1 VARYING THE TAC

909. In cases such as SPO 7, where the level of biomass that can produce the maximum sustainable yield ( $B_{MSY}$ ) is not known, s 13(2A) of the Act provides for the Minister to use the best available information<sup>8</sup> to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, the  $B_{MSY}$  level.
910. The best available information is that the biomass level of rig in SPO 7 is currently well above the management target and likely to remain so, at least in the short term, as a result of good recruitment predicted by the 2017 WCSI survey. Consequently, there is an opportunity to increase utilisation (increase the TAC) while ensuring sustainability, in a manner that is not inconsistent with the objectives of s 13.
911. Along with the *status quo*, two different options are proposed which allow for consideration of the uncertainty in the available information and to manage any potential sustainability risk.
912. Option 1 is the *status quo*.
913. Option 2 increases the TAC from 306 to 332 tonnes (an increase to the TAC of 26 tonnes, 8% of the current TAC), which would provide for a relatively conservative increase in catch and a low risk to sustainability.
914. Option 3 increases the TAC from 306 to 357 tonnes (an increase to the TAC of 51 tonnes, 17% of the current TAC), which provides for a higher level of catch, with a comparatively greater (but still low) risk to sustainability.
915. Fisheries New Zealand considers that all options are likely to maintain the stock above the target  $B_{MSY}$  level. In each case, ongoing monitoring of the stock using trawl surveys will enable responsive management and appropriate adjustments to address risk and possible opportunity in future. An updated trawl survey is scheduled for 2019.

<sup>8</sup> Defined for SPO 7 in *Why the need for change?* above.

## 4.2 VARYING ALLOWANCES AND THE TACC

916. Having set the TAC, the Minister must make allowances for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing (s 20 & 21).

### Allowance for Māori customary fishing

917. Fisheries New Zealand considers that the current allowance adequately provides for current levels of customary take of rig in SPO 7, and is proposing to retain the current customary allowance for all options.

### Allowance for recreational fishing

918. Fisheries New Zealand considers that the current allowance adequately provides for current levels of recreational take of rig in SPO 7, and is proposing to retain the current recreational allowance for all options.
919. A repeat of the 2011/12 National Panel Survey of Marine Recreational Fishers is currently underway in 2017/18, and updated estimates of recreational catch in JDO 7 will be used to inform future management.

### Allowance for all other sources of mortality caused by fishing

920. An allowance for all other sources of mortality caused by fishing of 5% of the TACC is proposed for all options. For Option 1 (retaining the *status quo*) the allowance remains unchanged at 12 tonnes. For Option 2, a one-tonne increase to 13 tonnes is proposed, and for Option 3, a two-tonne increase to 14 tonnes is proposed.
921. While there is no information available to quantify all other mortality to the stock caused by fishing, the available evidence suggests that an allowance of 5% of the TACC is appropriate given the biological characteristics of the stock and mortality caused by trawling, set net, and non-commercial methods.

## TACC

922. The two options proposed for the SPO 7 TACC (Table 1), a 10% increase (Option 2) and a 20% increase (Option 3), are intended to provide an opportunity for increased sustainable utilisation of rig in SPO 7. The options are higher than the current TACC, or levels of landings, in SPO 7 over the past 11 years (Figure 5). This increase is proposed because of the strong signal from the WCSI trawl survey and the BT(ALL) CPUE series that the fishery is experiencing a trend of increased relative abundance, and is above the target level, indicating that additional catch could be taken which maintains the stock above the target.
923. The proposed Option 2 TACC (Figure 5, dashed green line) provides for a level of commercial catch last seen in 2006/07, and the proposed Option 3 TACC (Figure 5, dashed blue line) provides for a level of commercial catch last seen in 2003/04. While all accepted indices of relative abundance of rig in SPO 7 (WCSI trawl survey, SN(038) CPUE series, and BT(ALL) CPUE series) show a decline in relative abundance of rig at the level of catch from 2000 to 2006 (i.e., at the proposed new levels of catch under Options 2 and 3) (Figure 4), the WCSI trawl survey and BT(ALL) CPUE indicate that

relative abundance of rig in SPO 7 has increased substantially since this period, and is currently at or near an all-time high. Fisheries New Zealand considers that the rig stock in SPO 7 would be able to support the proposed increases to the SPO 7 TACC, allowances and TACC without a risk to its long-term sustainability.

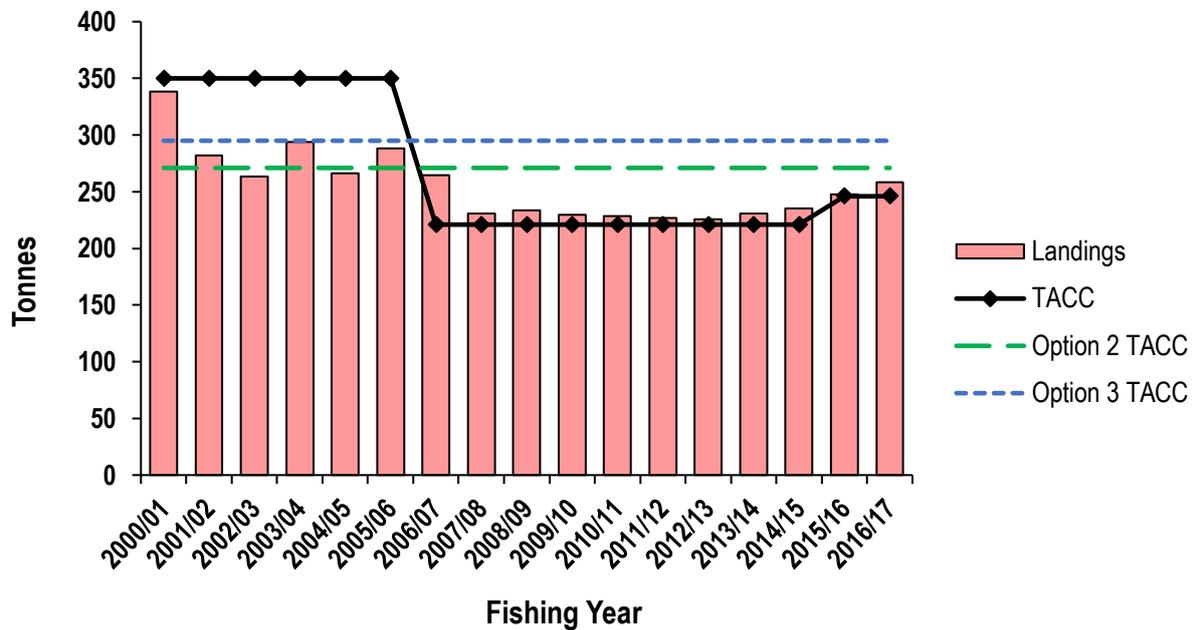


Figure 5: Annual catches vs TACC for SPO 7 between 2000/01 and 2016/17, including TACC levels proposed for Options 2 and 3.

### 4.3 DEEMED VALUE RATES

924. There are no proposed changes to the deemed value rates for SPO 7 for the 2018/19 fishing year (see Table 2 above).

### 4.4 EVALUATION OF OPTIONS

925. The increases to catch limits and allowances proposed in Option 2 and Option 3 are considered to be sustainable, and supported by the best available information which suggests that rig abundance in SPO 7 is currently high and is likely above biomass management targets.

926. The WCSI trawl survey in 2017 found continued high biomass for rig, the second highest estimate of biomass for SPO 7 in the 25-year time survey series. In the 2016/17 year, rig in SPO 7 was taken mainly as bycatch in the mixed target trawl fishery (55% of rig landed in SPO 7) and the target rig and school shark fishery (40% of rig landed in SPO 7). In a mixed-species trawl fishery, an increase in TACC for rig also is expected to cover an increase in bycatch of rig when targeting other fish species.

927. Increasing the TACC and allowances will allow fishers the opportunity to take advantage of increased abundance of rig. An additional benefit for commercial fishers is that an increased TACC would reduce the amount of deemed value payments incurred, provided fishers constrain their catch within the commercial catch limit. The predicted economic revenues from the options are outlined in Table 4. Retaining the current TAC and TACC

(Option 1, *status quo*) may result in opportunity loss through unnecessarily constrained catch.

**Table 4: Predicted changes to commercial revenue of the proposed options, based on port price of \$3.90/kg for SPO 7 in 2017/18.**

	TACC	Change from <i>status quo</i> (t)	Predicted revenue change (\$ p.a.)
Option 1 ( <i>Status quo</i> )	246		
Option 2	271	25 ↑ (10%)	\$97,500 ↑
Option 3	295	49 ↑ (20%)	\$191,100 ↑

928. The increases to catch limits and allowances above current settings in Option 1, as proposed in Option 2 and Option 3, are both considered to be sustainable, and supported by the best available information which suggests that rig abundance in SPO 7 is near an all-time high. Fisheries New Zealand will continue to monitor the state of the SPO 7 fishery via the biennial WCSI inshore trawl survey, and may consider reviewing the TAC when this information is updated.

929. Available information suggests recreational and customary Māori take is well within current allowances. However, non-commercial take may be increasing, considering the current increased stock abundance in the fishery.

930. Fisheries New Zealand welcomes information and views of tangata whenua and stakeholders regarding these proposed options, including any other information to support alternate options.

### Option 1 (*Status quo*)

931. Option 1 proposes no change to the *status quo*. The existing TAC, TACC and allowances would be retained. As the stock is considered to be likely above target biomass, the level that the current TAC is set at is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield.

932. However, this option reflects the most cautious approach to the increase in SPO 7 abundance given the relatively low level biomass fluctuation in this fishery. Retaining the current TAC settings may result in opportunity lost for the commercial sector. This is because Option 1 does not enable industry to respond to the high biomass in a way that would allow them to maximise value, at least in the short term.

### Option 2

933. A 25 tonne (10%) increase in the TACC (Option 2) from 246 to 271 tonnes is likely to be a relatively conservative response to the increase in SPO 7 biomass available for commercial fishers.

934. Fisheries New Zealand considers that an increase in the SPO 7 TACC may lead to increased targeting of rig in SPO 7. As outlined in the NPOA Sharks, Option 2 is a more cautious approach for providing for an increased utilisation for rig than Option 3. This option is more favourable to any long-term considerations for rig, as any increase in fishing pressure may adversely impact on the sustainability of the SPO 7 stock.

### Option 3

935. A 49 tonne (20%) increase in the TACC (Option 3) places greater weight on the information showing increased abundance and further opportunities for sustainable utilisation.
936. As indicated in Option 2, an increase in the SPO 7 TACC may lead to increased targeting of rig in SPO 7 or bycatch of rig in other fisheries. Fisheries New Zealand recognises the objective under the NPOA sharks to cautiously set catch allowances for stocks such as rig in SPO 7, and acknowledges that Option 3 presents a less cautious approach to providing for increased utilisation of SPO 7 than Option 2. Fisheries New Zealand considers that greater catch allowances under this option would still ensure the long-term sustainability of the SPO 7 stock.

## 5. Other Relevant Matters

### 5.1 ENVIRONMENTAL PRINCIPLES AND SUSTAINABILITY MEASURES

937. The proposals are not expected to significantly change the environmental impacts and interactions of the SPO 7 fishery (s 9 of the Act). The proposals will provide for likely additional catch of rig resulting from greater abundance of rig in SPO 7, and additional targeted fishing effort for SPO 7 is not expected. Therefore any additional impacts on bycatch species, protected species, and the benthic environment are unlikely. The proposals are also considered to adequately address the requirements of s 11 of the Act.
938. Rig are principally caught by trawl and set net in SPO 7. Set netting is considered unlikely to impact on seabed habitat, however, the use of set nets can potentially impact on species diversity, because set nets can unintentionally catch a wide range of inshore species. Many harbour areas where rig are targeted are important nurseries for a wide range of inshore species. There is no indication that set netting for rig adversely affects the value of the harbours as nurseries.
939. There have been instances on the west and east coast of the South Island where endangered Hector's dolphin have been caught in commercial and non-commercial set nets. To manage this risk, a range of commercial and non-commercial set netting restrictions have been put in place around much of the coast in FMA 7.
940. In SPO 7, both commercial and recreational set netting is prohibited within two nautical miles offshore from Awarua Point north of Fiordland to the tip of Cape Farewell at the top of the South Island, as a part of a suite of regulations intended to protect Hector's dolphins, implemented from 1 October 2008. The commercial closure is restricted to the period 1 December to end of February, while the recreational closure is effective for the entire year. Fisheries New Zealand considers that the proposed TACs under Option 2 and Option 3 will not result in an increase in set net effort in areas where Hector's dolphin may be found.
941. Commercial fishing for rig in SPO 7 is managed under the Harvest Strategy Standard. In addition the NPOA sharks provides in setting fisheries management measures for species such as rig in SPO 7. Fisheries New Zealand notes that there is a rebuilding population of

rig in SPO 7 and the proposed TAC options are consistent with the objectives of the NPOA sharks.

## 5.2 INPUT AND PARTICIPATION OF TANGATA WHENUA

942. The proposal to consult on SPO 7 was presented to the Te Waka a Māui me Ōna Toka Iwi Forum. This forum represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. The forum supported a review of the SPO 7 fishery.
943. Fisheries New Zealand will be taking the proposed options to the Te Waka a Māui me Ōna Toka Iwi Forum again in July to seek further input, and will incorporate the Forum's views into the final advice to the Minister.

### Kaitiakitanga

944. Under Section 12(1)(b) the Minister must also have particular regard to kaitiakitanga before setting or varying a TAC. Under the Act, kaitiakitanga is the exercise of guardianship, and in relation to any fisheries resources, includes the ethic of stewardship based on the nature of the resources, as exercised by the appropriate tangata whenua in accordance with tikanga Māori.
945. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.
946. Rig (mango) is identified as a taonga species in the Te Waipounamu Iwi Fisheries Plan. This plan contains objectives to support and provide for the interests of South Island iwi. That Forum Fisheries Plan contains three objectives which are relevant to the management options proposed for SPO 7:
- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;
  - b) Management objective 3: to develop environmentally responsible, productive, sustainable and culturally appropriate commercial fisheries that create long-term commercial benefits and economic development opportunities for South Island iwi; and
  - c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
947. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of these three management objectives in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

### 5.3 NATIONAL PLAN OF ACTION FOR SHARKS (NPOA SHARKS)

948. Given New Zealand's objectives under the NPOA Sharks strategy, Fisheries New Zealand considers that any increased risk to the long-term sustainability of rig following any change to the SPO 7 TACC can be adequately addressed. As outlined in the NPOA Sharks strategy, this includes monitoring the SPO 7 stock reviewing fisheries management measures, as required.
949. In line with the objectives of the NPOA Sharks, Fisheries New Zealand will continue to monitor the state of the SPO 7 fishery via the biennial WCSI inshore trawl survey, and may consider reviewing the TAC when this information is updated in 2019.

## 6. Further Information

Should you require further information, please see:

*Fisheries Act (1996)*

<http://www.legislation.govt.nz/act/public/1996/0088/latest/DLM394192.html>

*Fisheries New Zealand Plenary document*

Fisheries New Zealand (2018). Fisheries Assessment Plenary, May 2018: stock assessments and stock status. Compiled by the Fisheries Science Group, Fisheries New Zealand, Wellington, New Zealand.

*SPO 7 Sustainability Round Review 2015*

<https://www.mpi.govt.nz/news-and-resources/consultations/review-of-fisheries-sustainability-measures-for-1-october-2015/>

*Draft National Fisheries Plan for Inshore Finfish*

Draft National Fisheries Plan for Inshore Finfish. (2011). Compiled by the Ministry of Fisheries, Wellington, New Zealand, 61 p.  
<https://fs.fish.govt.nz/Page.aspx?pk=152>