



Review of Management Controls for the Southern Jack Mackerel Fishery (JMA 3) in 2016

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Requests for further copies should be directed to:

Publications Logistics Officer
Ministry for Primary Industries
PO Box 2526
WELLINGTON 6140

Email: brand@mpi.govt.nz
Telephone: 0800 00 83 33
Facsimile: 04-894 0300

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1 Submission Information

MPI welcomes written submissions on the proposals contained in the Consultation Document. All written submissions must be received by MPI no later than 5pm on Monday 11 July.

Written submissions should be sent directly to:

Deepwater Fisheries Management
Ministry for Primary Industries
P O Box 2526
Wellington 6011

or emailed to FMSubmissions@mpi.govt.nz

1.1 OFFICIAL INFORMATION ACT 1982

All submissions are subject to the Official Information Act and can be released (along with personal details of the submitter) under the Act. If you have specific reasons for wanting to have your submission or personal details withheld, please set out your reasons in the submission. MPI will consider those reasons when making any assessment for the release of submissions if requested under the Official Information Act.

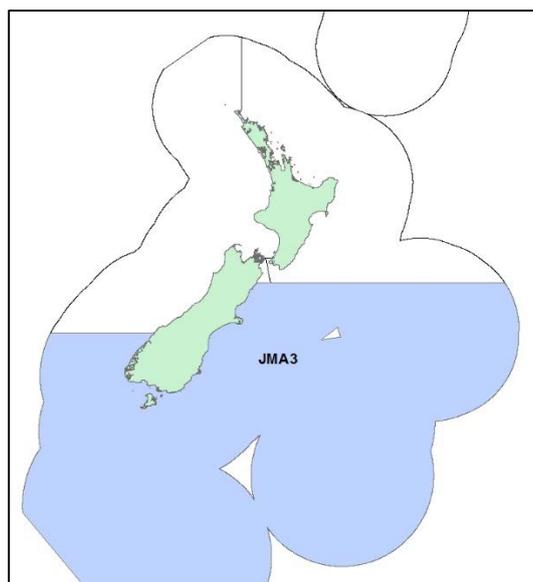


Figure 1. Quota management area (QMA) for the JMA 3 fishery

2 Executive Summary

The Ministry for Primary Industries (MPI) is seeking information and views from tangata whenua and stakeholders to inform a review of catch limits and allowances for the southern jack mackerel stock (JMA 3).

New Zealand's jack mackerel fisheries comprise three separate species that are managed as a species complex. Until the mid-1980s only two jack mackerel species had been reported in New Zealand waters. The third species (*Trachurus murphyi*, also called “Chilean” or “redtail” jack mackerel) was first positively identified in 1986 but may have been present since 1984.

After its initial reporting, the abundance of *T. murphyi* increased dramatically. The catch limit for the JMA 3 stock was increased from 2,700 tonnes in 1992/93 to 18,000 tonnes in 1994/95 in response to the increase in abundance. Catch of *T. murphyi* in JMA 3 remained high throughout the 1990s but has remained at or just above pre-1990s levels since 2000/01.

Since 2000, the extensive distribution of *T. murphyi* has decreased and although still the dominant species in JMA 3, it is far less abundant than it was during the 1990s. The primary rationale for reducing the catch limit for JMA 3 is that the current catch limit is no longer appropriate due to a sustained period of decreased abundance of *T. murphyi*.

Table 1 sets out MPI's initial proposals for catch limits and allowances for JMA 3.

Table 1. Proposed TACs, TACCs and allowances for JMA 3 (all values in tonnes)

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	Other sources of fishing-related mortality
Current Settings	-	18,000	-	-	-
Option 1	18,000	17,610	20	20	350
Option 2	9,000	8,780	20	20	180
Option 3	7,500	7,310	20	20	150
Option 4	6,000	5,840	20	20	120

Current catch limits for JMA 3 consist solely of a TACC; a TAC or allowances have never been set. For all options MPI proposes setting a TAC with 20 tonne allowances for both customary Māori and recreational fisheries, together with an allowance for other sources of fishing related mortality equivalent to 2% of the TACC.

3 Purpose

3.1 ISSUE/NEED FOR ACTION

The primary rationale for reviewing the TAC for JMA 3 is the prolonged period of decreased abundance of the dominant jack mackerel species found in this QMA, *T. murphyi*. The arrival of this species in New Zealand waters in the mid to late 1980s is well documented, as is its dramatic increase in abundance throughout New Zealand, particularly in JMA 3. In response to the increased abundance, the JMA 3 catch limit was increased by around 600% in the early to mid-1990s.

JMA 3 landings increased tenfold between the mid-1980s and the mid-1990s and remained high throughout much of the 1990s. However since 2000/01 there has been a sustained period of reduced catches, due almost entirely to the decrease in abundance of *T. murphyi*. It is logical that having increased the JMA 3 TACC in response to the increase in abundance of *T. murphyi*, the TAC should now be reviewed in response to the prolonged period of decreased abundance.

The arrival/influx of *T. murphyi* in New Zealand occurred during a period of increased abundance of this species throughout its distribution that started in the 1970s and continued through to about the mid to late 1990s. During this period, the species expanded its distribution westward across the Pacific to New Zealand and Australia. The ongoing existence of *T. murphyi* in New Zealand is thought to depend on the continued arrival of fish from the South Pacific.

The *T. murphyi* present in New Zealand are thought to form part of a wider stock distributed throughout the South Pacific Ocean. A stock assessment for *T. murphyi* was presented to the South Pacific Regional Fisheries Management Organisation (SPRFMO) Scientific Committee in October 2014. The stock assessment calculated that the biomass of *T. murphyi* in 2013 was 14% B_0 , after having reached a low of 5% B_0 in 2010.¹

With the current Pacific-wide biomass at low levels, it is unlikely that the volume of *T. murphyi* arriving in New Zealand waters from the South Pacific is sufficient to sustain the current TACC. This is demonstrated by the sustained period of low catch of JMA 3 since 2000/01, which has occurred in parallel with the ongoing decline in abundance of *T. murphyi* throughout the Pacific.

3.2 MANAGEMENT APPROACH

Jack mackerel is managed under the National Fisheries Plan for Deepwater and Middle-Depth Fisheries (National Deepwater Plan), which was approved by the Minister of Fisheries under Section 11A of the Fisheries Act 1996. Within the National Deepwater Plan it is classed as a Tier 2 stock. Tier 2 stocks are typically less valuable bycatch fisheries or are only target fisheries at certain times of the year.²

¹ B_0 refers to the biomass that theoretically would have occurred if the stock had never been fished.

² In contrast, JMA 7 is classed as a Tier 1 stock due to the much higher catch level taken from that fishery.

As with most Tier 2 species, there is insufficient information for JMA 3 to undertake a stock assessment. Stock assessments describe the past and current status of a fish stock and may allow predictions to be made about how a stock will respond to current and future management options. In the absence of a stock assessment, regular characterisations are scheduled for this stock. A characterisation summarises the available information with the aim of developing methods for monitoring that species or stock.

In the absence of species-specific measures, the default reference points set out by the Harvest Strategy Standard apply (as set out in Table 2 below). 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 QMS. For more information, refer to [this](#) link.

Table 2. Jack mackerel default reference points, and the associated management response

Reference point	Management response
Management target of 40% B ₀	Stock permitted to fluctuate around this management target. TAC changes will be employed to move stock toward or above 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.
Harvest control rule	Management actions determined by the results of a series of forward projections under a range of catch assumptions, guided by the biological reference points

4 Background Information

4.1 BIOLOGICAL CHARACTERISTICS OF JACK MACKEREL SPECIES

New Zealand's jack mackerel fisheries comprise three species that are managed as a species complex. Fishers are not required to report each species separately. Until the mid-1980s only two jack mackerel species had been reported in New Zealand waters: *Trachurus novaezelandiae* ("yellowtail horse mackerel") and *T. declivis* ("greenback" or "greentail horse mackerel"). Both of these species are native to New Zealand and Australian waters.

Within New Zealand waters, *T. novaezelandiae* is uncommon south of Kaikoura and is not found at all on the Chatham Rise. *T. declivis* is uncommon south of about Otago. Both species are unlikely to spawn within the JMA 3 QMA. The JMA 3 QMA therefore represents the southern limit of these species' distributions in New Zealand waters.

In 1986 a third species was described, *T. murphyi*, the "Chilean" or "redtail" jack mackerel. This species has a much wider distribution than the other two and is found across much of the South Pacific between South America and Australia. It can be found between the surface and 500m water depth.

There was a major proliferation of this species in South American waters in the 1970s, thought to be a response to the decline in Peruvian anchoveta abundance due to overfishing. *T. murphyi*, together with a species of sardine, filled the niche previously occupied by the

anchoveta. *T. murphyi* then adopted an open ocean habitat (*i.e.*, it moved into the open ocean away from the coast) and extended its distribution westwards.

T. murphyi was first noted near the Chatham Islands in the mid-1980s. Over a period of 5-6 years there was a rapid “invasion” and the species became distributed all around New Zealand. Abundance is thought to have peaked in 1993-1994. From about 1998 abundance declined to a much lower level than the preceding 8-10 years.

It remains unclear whether the persistence of *T. murphyi* in New Zealand is due to a resident spawning population or continued arrival of fish from the South Pacific. The absence of juveniles means the latter hypothesis is currently favoured by researchers.

As noted above, fishers are not required to report each species separately. Information on species composition is instead determined from data collected by observers. The most recent information on the species composition of jack mackerels within JMA3 is for the 2012/13 fishing year.

Researchers split catch into two areas; north and south of the Otago Peninsula. In the northern area, where 72% of estimated catch was taken, *T. declivis* was the dominant species (52% of catch). In the southern area, where 28% of estimated catch was taken, *T. murphyi* was the dominant species (78% of catch). Overall, *T. murphyi* was the dominant species and made up 57% of JMA 3 catch. Catch of *T. novaezelandiae* was negligible during 2012/13.

4.2 FISHERY DESCRIPTION

The JMA 3 stock was introduced into the QMS in 1987 with a 2,200 tonne commercial catch limit. This was increased to 2,700 tonnes in 1988/89. In 1993/94 and 1994/95 the TACC was increased by 6,300 and 9,000 tonnes respectively, bringing it up to the current 18,000 tonne level. It has remained at this level ever since.

JMA 3 catch started increasing from 1989/90 onwards and peaked at just under 20,000 tonnes in 1995/96. Landings ranged between 10 and 20,000 tonnes between 1992/93 and 1999/00. However, since 2000/01 catch has not exceeded 5,000 tonnes. Annual landings from 1983/84 to 2014/15 are shown in Figure 2 below.

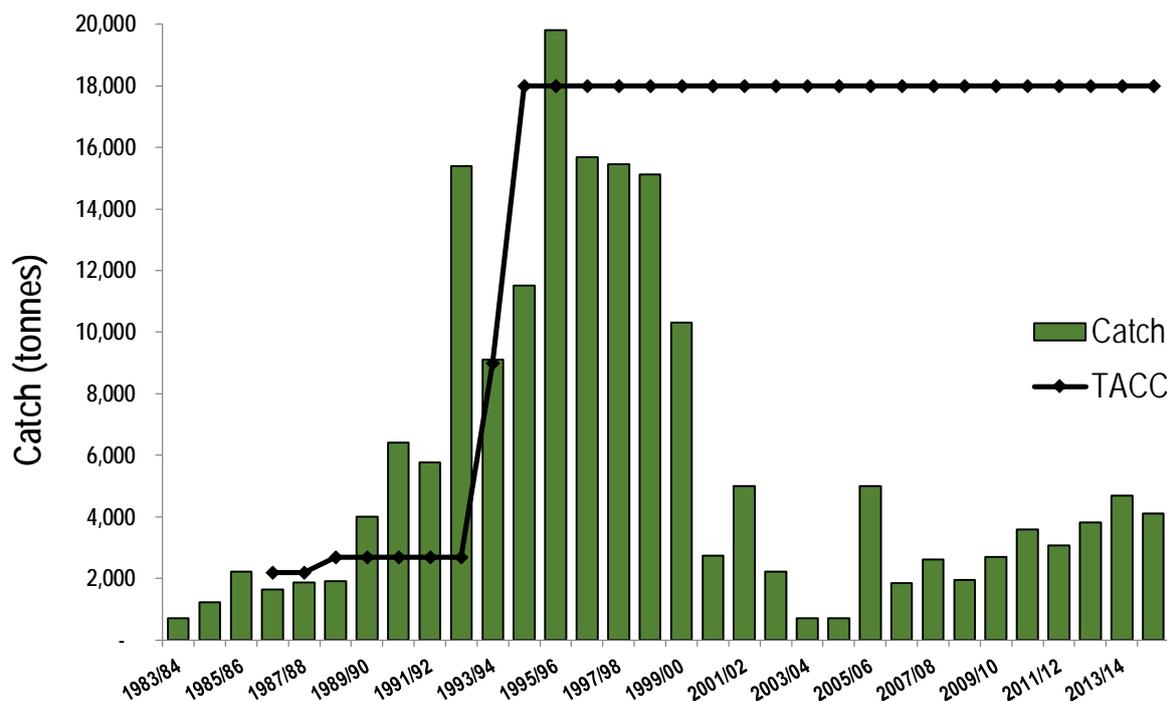


Figure 2. Graph showing catch vs TACC for JMA 3 between 1983/84 and 2014/15

Trawling has always been the dominant fishing method in JMA 3. Since 2000/01, JMA 3 catch has been dominated by the midwater trawl fleet, which comprises 6-8 large vessels. These vessels between them have taken over 80% of JMA 3 in the last 15 years.

During the 1990s some JMA 3 was taken by the purse seine fleet. Purse seine catch peaked at 23% of landed catch in 1992/93 but has been intermittent since 2000/01. No JMA 3 catch was reported by this method during eight of the last 11 years.

Most catch is taken in Southland (on the Stewart/Snares Shelf) or off the east coast of the South Island (Mernoo Bank or off Banks Peninsula). A smaller proportion of catch is taken around the Chatham Islands. In the most recent fishing year (2014/15) the proportion of catch taken from the east coast South Island and Stewart/Snares Shelf areas was almost equal (just under 40% of total estimated catch from both areas) while 23% of estimated catch was taken around the Chatham Islands

4.3 PREVIOUS REVIEW

The most recent JMA 3 catch limit reviews were undertaken for both the 1993/94 and 1994/95 fishing years. Both reviews were undertaken in response to the influx of *T. murphyi*. The catch limit increases in both these years were made under the proviso that increased catch could only comprise *T. murphyi*. Landings of the other two species were not to exceed the earlier 2,700 tonne catch limit.

Despite the reduced abundance of *T. murphyi*, and reduced landings of JMA 3 since 2000/01, the JMA 3 catch limit has not been reviewed since 1994/95.

4.4 NEW INFORMATION

The rapid influx of *T. murphyi*, the decade of increased catches in JMA 3 during the 1990s, and the subsequent persistence of the species, albeit at a much reduced level, in New Zealand waters is well documented.

There is no stock assessment information for the two native species of jack mackerel in JMA 3. The wider South Pacific *T. murphyi* stock is managed by the South Pacific Regional Fisheries Management Organisation (SPRFMO). A stock assessment for *T. murphyi* of the South Eastern Pacific Ocean was carried out on behalf of SPRFMO using data up to 2013. The assessment indicated that biomass of *T. murphyi* in 2013 was 14% B_0 , after reaching a low of 5% B_0 in 2010. This stock status is below the soft limit set out in the Harvest Strategy Standard (Table 2).

While the *T. murphyi* stock in JMA 3 is not solely New Zealand's management responsibility considering its wide distribution across the southern Pacific, it is nevertheless caught by the New Zealand fleet and JMA 3 catches are likely contributing to mortality in this stock, which is now much declined throughout its range. Considering the principles of the Harvest Strategy Standard, JMA 3 catch limits should be lowered to reduce fishing mortality in *T. murphyi*.

The influx of *T. murphyi* and the decade of increased landings of JMA 3 during the 1990s occurred during a period of sustained high abundance of this species in the South Pacific (see Figure 3 below). With current biomass in the South Pacific at low levels, maintaining a catch limit that was set at the peak of *T. murphyi* abundance is not considered appropriate.

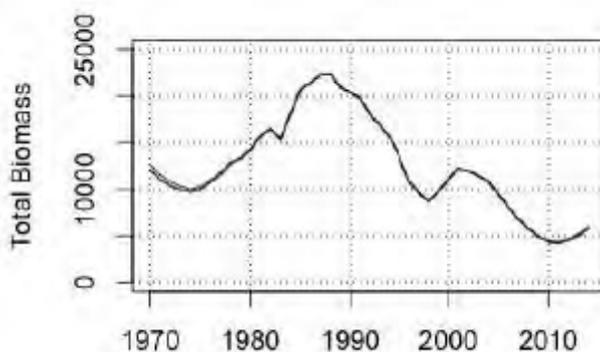


Figure 3. Diagram showing population estimate of jack mackerel in the South Eastern Pacific between 1970 and 2014 (total biomass in thousands of tonnes) ³

5 Legal Considerations

5.1 SETTING MANAGEMENT MEASURES

Biomass information for *T. murphyi* in the South Pacific is available. There is, however, no stock assessment information for the two native species of jack mackerel and no information for the component of the *T. murphyi* stock present in JMA 3. For this reason, a TAC for JMA 3 would be set under section 13(2A) of the Fisheries Act 1996 (the Act). This section is relevant for stocks for which the MSY is not able to be reliably estimated using the best available information.

³ Diagram taken from paper presented at 3rd meeting of the SPRFMO Scientific Committee, October 2015. Paper available [here](#).

Section 13(2A) requires the Minister for Primary Industries (the Minister) 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, a level that can produce the maximum sustainable yield (MSY). This paper sets out options for the Minister in setting a TAC. Given the nature of the fishery, including the uncertainty surrounding the stock status of the three jack mackerel species in JMA 3 and the decline of *T. murphyi*, and the large decreases proposed, MPI considers that options to set a TAC and decrease the TACC for JMA 3 are not inconsistent with the objective outlined above.

Under section 13(3) of the Act, the Minister must consider relevant social, cultural and economic considerations in determining an appropriate way and rate to move the stock towards or above a level that can produce the MSY.

The TAC must be apportioned between the relevant sectors and interests set out under the provisions of section 21 of the Act. Section 21 requires the Minister to allow for Māori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

Section 12 (1)(b) of the Act requires that the Minister provide for the input and participation of tangata whenua and have particular regard to kaitiakitanga before setting or varying a TAC. MPI will provide relevant Fisheries Forums opportunity for engagement on the proposed options.

Recreational and customary Māori catch are not well known, though are thought to be small in JMA 3. For all options MPI proposes 20 tonne allowances for these sector groups.

In similar trawl fisheries an allowance of 2% of the TACC exists to account for other sources of fishing related mortality. MPI proposes to incorporate this allowance into all options.

5.2 FURTHER CONSIDERATIONS

When making a decision concerning the TAC for a stock, the Minister must have regard to interdependence of stocks, the biological characteristics (discussed above) and any environmental conditions affecting the stock.

Sections 9(a) and (b) of the Act also require the Minister to take into account that associated or dependent species be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

The key environmental interactions associated with the JMA 3 fishery are discussed below with reference to the likely impacts of the proposed management options.

5.2.1 Seabirds

Management of seabird interactions with New Zealand's commercial fisheries is driven through the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA Seabirds). The NPOA Seabirds reflects New Zealand's obligations under customary international law to take into account the effects of fishing on associated species such as seabirds.

The NPOA Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all species to the extent practicable.

The level of risk from commercial fishing to individual seabird species has been identified through a comprehensive hierarchical risk assessment that underpins the NPOA Seabirds. Seabird interactions are known to occur with JMA 3 however the rate is low. The jack mackerel fisheries overall were assessed to contribute very low levels of risk to a small number of seabird species.

Regulatory and non-regulatory management measures are in place to mitigate and manage interactions with seabirds. Mandatory measures include the requirement that all trawl vessels over 28 m in length deploy bird mitigation devices during fishing. Non-regulatory management measures include vessel-specific vessel management plans (VMPs). The VMPs describe on-board practices vessels must follow to reduce the risk of seabird interactions, including offal management and good factory cleanliness. MPI monitors each vessel's performance against its VMP and works with the Deepwater Group Ltd to rectify any issues that arise during the fishing season. This practice will continue during the 2016-17 fishing year.

If the abundance of *T. murphyi* in JMA 3 remains at a level similar to that of the last 15 years, fishing effort in JMA 3 is likely to remain at a level similar to that of recent years regardless of the TAC option. With the range of regulatory and non-regulatory measures in place, the management proposals should have no additional effects on seabirds as effort is unlikely to increase.

5.2.2 Fish bycatch

When targeting species other than southern blue whiting, squid or hoki in the area encompassed by the JMA 3 QMA, the midwater trawl fleet may target jack mackerel or other species that have similar distributions such as barracouta or redbait. When targeting these species, catch tends to comprise around 90% jack mackerel/barracouta/redbait combined and 10% other species.

Fishing effort for jack mackerel in JMA 3, together with barracouta and redbait, is not expected to increase significantly from current levels regardless of the JMA 3 TAC options. Fish bycatch is therefore not expected to change significantly.

5.2.3 Marine mammals

The capture rate of marine mammals (fur seals and dolphins) in the JMA 3 fishery is very low. It is not thought that the rate of captures is having an adverse effect of the populations of these species.

MPI works closely with industry to increase awareness amongst the fleet of the risk of interactions, and emphasises the importance of adherence to the current marine mammal operational procedures (MMOP). The MMOP aims to reduce the risk of interactions with marine mammals by requiring that vessels minimise the length of time the fishing gear is on the surface, remove all dead fish from the net before shooting the gear, steam away from any congregations of marine mammals before shooting the gear and appoint a crew member to watch for marine mammal interactions every time the gear is shot or hauled. Performance in

relation to these procedures is audited by MPI, which will continue into the 2016/17 fishing year.

Under all options, fishing effort for jack mackerel in JMA 3 is not expected to increase and there should be no additional risk to marine mammals.

5.2.4 Benthic impacts

Jack mackerel is generally fished using mid-water trawl gear that is fished on the bottom. When fishing at night however, the gear is often fished off the bottom as jack mackerel tends to move up the water column at night.

MPI acknowledges that the proposals to reduce the JMA 3 TACC are unlikely to affect the recent level of fishing effort and hence limit benthic impacts. However, as current effort is considerably less than that during the 1990s, the current level of benthic impact is considerably less than that of the 1990s.

MPI will continue to monitor the trawl footprint of the jack mackerel and other deepwater fisheries annually.

6 Proposed Options

MPI is consulting on the options set out in Table 3. Three of the four options involve reductions to the JMA 3 catch limit. However, in all cases the proposed TACs are higher than the highest catch reported in the fishery between 2000/01 and 2014/15. This means that all options are unlikely to constrain catch of JMA 3 based on current catch levels.

The rationale for not reducing the TAC to the pre 1993/94 level (2,700 tonnes) is due to the continued persistence, albeit at a reduced level, of *T. murphyi* in New Zealand waters and the fact that it is the dominant species in JMA 3. There is no information indicating sustainability concerns with the two native jack mackerel species in JMA 3 at current catch levels. However, if the current 18,000 tonne TACC were to be taken, this could introduce sustainability concerns for these two species.

Table 3. Proposed TACs, TACCs and allowances for JMA 3 (all values in tonnes)

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	Other sources of fishing-related mortality
Current Settings	-	18,000	-	-	-
Option 1	18,000	17,610	20	20	350
Option 2	9,000	8,780	20	20	180
Option 3	7,500	7,310	20	20	150
Option 4	6,000	5,840	20	20	120

All options include 20 tonne allowances for customary Māori and recreational fisheries, which is based on the equivalent allowances for hoki. Additionally, MPI proposes an allowance for other sources of fishing related mortality equivalent to 2% of the TACC. This allowance accounts for unreported jack mackerel mortality, such as loss due to burst nets. MPI welcomes stakeholder comment on these allowances.

6.1 OPTION 1

As there is currently no TAC set for JMA 3, this option would set the JMA 3 TAC at 18,000 tonnes with a TACC of 17,610 tonnes.

6.2 OPTION 2

This option would set the JMA 3 TAC at 9,000 tonnes with a TACC of 8,780 tonnes. This would not constrain catches at current levels and would provide for an increase in catch if the abundance of any of the three species increased.

6.3 OPTION 3

This option would set the JMA 3 TAC at 7,500 tonnes with TACC of 7,310 tonnes. As with Option 1 it would not constrain catch at current levels and would provide for some increase in catch.

6.4 OPTION 4

This option would set a TAC of 6,000 tonnes with a TACC of 5,840 for JMA 3. This option is the closest to recent catch levels but would still not constrain catch if it remained at current levels. It provides limited scope for catches to increase. However, the TAC could be reviewed if information became available indicating an increase in abundance of any of the three species.

7 Other Matters

As noted earlier, fishers are not required to report the three jack mackerel species separately. Most information on species proportions comes from observers and MPI will ensure that observers continue to collect this information.

7.1 DEEMED VALUE RATES

Deemed values are an economic tool that incentivises commercial fishers not to catch in excess of their individual annual catch entitlement holdings. Ensuring deemed value rates are appropriately set is a fundamental principle of the Quota Management System.

Catch of JMA 3 has not exceeded the TACC since 1995/96. The port price for JMA 3 for the 2016/17 financial year is \$0.23 per kg, which represents a reduction from the \$0.44 per kg for the four-year period between 2011/12 to 2014/15. Despite the reduction in port price, the export value of jack mackerel appears to have gradually increased in recent years. MPI is satisfied that the current deemed value rates for jack mackerel do not require review. MPI will monitor JMA 3 catch and review deemed value rates if there is evidence that a review is required.

7.2 JMA 1 STOCK

The catch limits for the JMA 1 stock, which covers the east coast of the North Island, were also increased in 1993/94 and 1994/95 in response to the increased abundance of *T. murphyi*. The initial 5,970 tonne TACC was increased to 8,000 tonnes for 1993/94 and to 10,000 tonnes for 1994/95. As with JMA3, the expectation at this time was that the increase in catch would

be made up of *T. murphyi* and catches of the native species would not exceed the original catch limits.

Unlike JMA 3 however, catch in JMA 1 has remained at the level of the TACC since the decline in abundance of *T. murphyi*. The catch composition has changed however, and since approximately 1999/00 catch has been dominated by *T. novaezelandiae* (>90% of catch in recent years). The status of this species remains unknown.

MPI acknowledges the historical expectation regarding the increase in catch being made up of *T. murphyi*. However, MPI has no information upon which to base a review of the management controls for JMA 1 at this time. JMA 1 will be included in planned work on low information stocks. The catch limits for JMA 1 will be reviewed when information on the status of the two native species becomes available.

8 Conclusion

The dominant species in the JMA 3 fishery is *T. murphyi*, a species that has only been present in New Zealand for about 30 years. The area encompassed by the QMA represents the southern extent of the distribution of the two native jack mackerel species, one of which (*T. novaezelandiae*) comprises only a negligible proportion of JMA 3 catch.

The 18,000 tonne JMA 3 TACC was set in response to the invasion of *T. murphyi* that occurred during the 1990s. The increased abundance of this species resulted in JMA 3 landings of between 10 and 20,000 tonnes throughout most of the 1990s. Since 2000/01 however, JMA 3 catches have not exceeded 5,000 tonnes, due almost entirely to the decreased abundance of *T. murphyi*.

Retaining the TACC at 18,000 tonnes is not appropriate given the demonstrated decrease in abundance of *T. murphyi* and estimated low stock status of the Pacific stock. Given that the continued presence of *T. murphyi* in New Zealand waters is likely dependant on fish arriving from the South Pacific, the current TACC is aspirational and does not reflect the current low level of abundance of this species. Additionally, if catch were to increase to the level of the current TACC, it is likely this would create concerns regarding the sustainability of the dominant native species found in JMA 3 (*T. declivis*).

MPI proposes four options, three of which involve reducing the JMA 3 TACC. In all cases however, the TACC would still remain above recent catch levels and would provide some opportunity for catches to increase.

Currently, only a TACC is set for JMA 3. All options therefore also involve setting a TAC and allowances for the first time. MPI proposes an allowance of 2% of the TACC to account for other sources of fishing related mortality and 20 tonne allowances for recreational and customary Māori catch for all options.