



Review of Management Controls for the Paua 7 Fishery (PAU 7) in 2016

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1 Submission Information

The Ministry for Primary Industries (MPI) welcomes written submissions on any or all of the proposals contained in the Discussion Document. All written submissions must be received by MPI no later than 5pm on Monday 11 July 2016.

Written submissions should be sent directly to:

Inshore 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.

Paua (PAU 7)

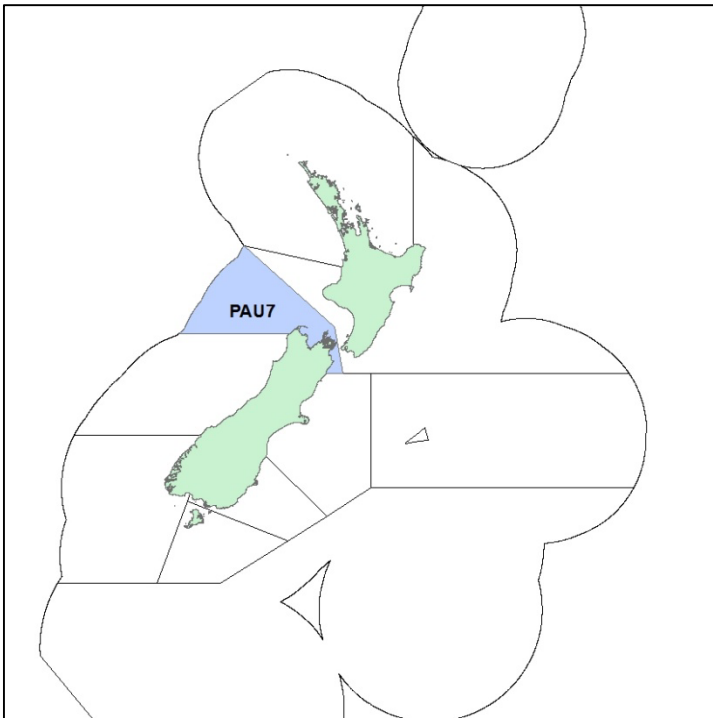


Figure 1: Quota management area (QMA) for PAU 7

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 for paua (*Haliotis iris*) in PAU 7. The PAU 7 fishery (Marlborough/Golden and Tasman Bays) extends from the western side of the South Island (Kahurangi Point), east to Cape Jackson, and to the north side of the Clarence River on the east coast of the South Island (Figure 1).

MPI proposes the following options for the upcoming fishing year (Table 1):

Table 1: Proposed TACs, TACCs, and allowances for PAU 7 (all values in tonnes)

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Māori	Recreational	Other sources of fishing-related mortality
Option 1 (<i>Status quo</i>)	220.24	187.24	15	15	3
Option 2	152	112	15	15	10
Option 3	115	75	15	15	10

The proposed decreases in catch limits have been put forward because the latest scientific information indicates that the PAU 7 stock is well below the target biomass level. The current management objective for PAU 7 is to maintain the stock at 40% of the unfished biomass (estimated to be above the level that can produce the maximum sustainable yield) so as to ensure sustainability and provide utilisation benefits for all sectors.

The results of the 2015 stock assessment indicate that PAU 7 is currently about as likely as not below the soft limit (20% B_0). This is despite the paua industry voluntarily shelving between 20-28% of the TACC for the past four years. The soft limit represents the level of stock biomass where a formal, time-constrained rebuilding programme for the fishery is triggered (guided by the MPI Harvest Strategy Standard). If fished at the current TAC and TACC (Option 1) the stock will continue to decline.

Given the results of the stock assessment, and the management objectives for this important shared fishery, steps are required to adjust catch limits and alter other management controls to support the rebuild of the fishery. The proposed options vary with respect to the way and rate they may support a rebuild of the fishery. Larger catch reductions have a greater probability of resulting in increased biomass and a much lower probability that biomass will continue to remain low or decline. However, larger reductions in catch limits mean a reduced opportunity for utilisation in the short term, which will have varying degrees of social, economic and cultural impacts.

The management settings for the 2016/17 fishing year would remain in place until future stock assessment information indicates either:

- A rebuild of the fishery has occurred and abundance is near or above the target reference level, or
- Further action is required to support a rebuild of the fishery near or above the target reference level.

The timing of a future review could be supported with development of a management approach for PAU 7 if there is multi-sector interest in establishing a collaborative longer-term management plan.

MPI is seeking tangata whenua and stakeholder information and views on the proposed options to support the development of final advice for decision by the Minister for Primary Industries.

3 Purpose

3.1 NEED FOR ACTION

The best available information on stock status for PAU 7 indicates abundance is very low and is at the level at which a rebuild programme for the fishery is triggered under MPI's Harvest Strategy Standard. The information suggests there is a need to reduce the level of catch coming out of the fishery to ensure long-term benefits from the stock can be provided, while ensuring sustainability.

3.2 MANAGEMENT APPROACH

The TAC for PAU 7 can be varied under section 13 of the Fisheries Act 1996. Section 13(2) of the Fisheries Act sets out requirements for setting a TAC where a reliable estimate of the current biomass of the stock ($B_{CURRENT}$) and the level of biomass that can produce the maximum sustainable yield (B_{MSY}), is known. Alternatively, where current biomass and B_{MSY} are not known, section 13(2A) of the Act provides for the Minister to use the best available information 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, B_{MSY} .

The draft National Fisheries Plan for Inshore Shellfish categorises PAU 7 as a Group 1 fishery, meaning it is one of New Zealand's most sought after shellfish fisheries. Paua is a valuable inshore commercial fishery, and is highly prized to many iwi and recreational fishers. Given the high level of benefits from paua, there is a strong management focus on ensuring paua fisheries remain healthy, and are managed at high levels of abundance so that they can continue to provide benefits over the long term. The high biological vulnerability of paua fisheries (*e.g.*, due to the risks associated with localised depletion), mean PAU 7 is subject to regular stock assessments to monitor and inform management.

The management approach for PAU 7 is that the Total Allowable Catch (TAC) is reviewed when stock assessment projections indicate the stock abundance will decline and/or remain below the target abundance level under current catch with greater than 50% probability.

4 Background Information

4.1 BIOLOGICAL CHARACTERISTICS OF PAUA

Paua form large aggregations on reefs in shallow subtidal coastal habitats. They move over very small spatial scales, such that the species may be considered sedentary. Paua are broadcast spawners and spawning is thought to occur annually.

Habitat-related factors are an important source of variation in the post-settlement survival of paua larvae. Growth, shape, and recruitment can vary over short distances and may be influenced by factors such as wave exposure, habitat structure, availability of food and population density.

Due to their biology, high levels of localised fishing pressure make paua susceptible to local recruitment failure. This occurs when some local populations may be fished hard in comparison to others, which can lead to poor larval distribution due to the limited dispersal range of the species. Because paua are largely sedentary, fishing pressure can also cause a spatial contraction of populations, which can impede successful spawning (due to reduced density) and subsequently affect overall productivity.

Changes in environmental conditions can impact on productivity of paua populations. Loss or reduction in drift algae, increased water temperatures, increased sedimentation and run-off can also have an effect on the health and viability of paua populations at various spatial scales.

4.2 COMMERCIAL FISHERY

Paua was introduced into the Quota Management System in 1986. The fishery landings for PAU 7 and associated TACCs since its introduction are shown in Figure 2.

Commercial fishers gather paua by hand while free-diving. The use of underwater breathing apparatus is not permitted in PAU 7. Commercial fishers may only harvest paua that have a minimum legal size of 125 mm shell length; however, there are areas within PAU 7 where commercial fishers have voluntarily instituted a larger voluntary minimum harvest size of 126 mm (Cape Koamaru to Wairau River from 2014-15), 130 mm (west coast) and 132 mm (east coast) shell length.

In addition to the customary spatial closures (summarised below in section 53.4), there are four marine reserves (Long Island, Horoiangi, Tonga Island and Westhaven) and the Cook Strait submarine cable and pipeline protection area where fishing (by all sectors) is prohibited.

Declines in biomass and the relatively low level of commercial catch-per-unit-effort (CPUE) have been a concern for the PAU 7 industry and MPI. To stimulate a rebuild in the fishery industry have shelved annual catch entitlement (ACE) at various times over the last 15 years. In 2002, following a voluntary commercial catch reduction the TAC was reduced by 20%. This reduction was further supported by additional voluntary shelving of ACE (of varying levels) by industry from 2003-04 to 2004-05. The catch reductions resulted in an increase in CPUE for several years. Since then biomass plateaued and from 2010 has been declining.

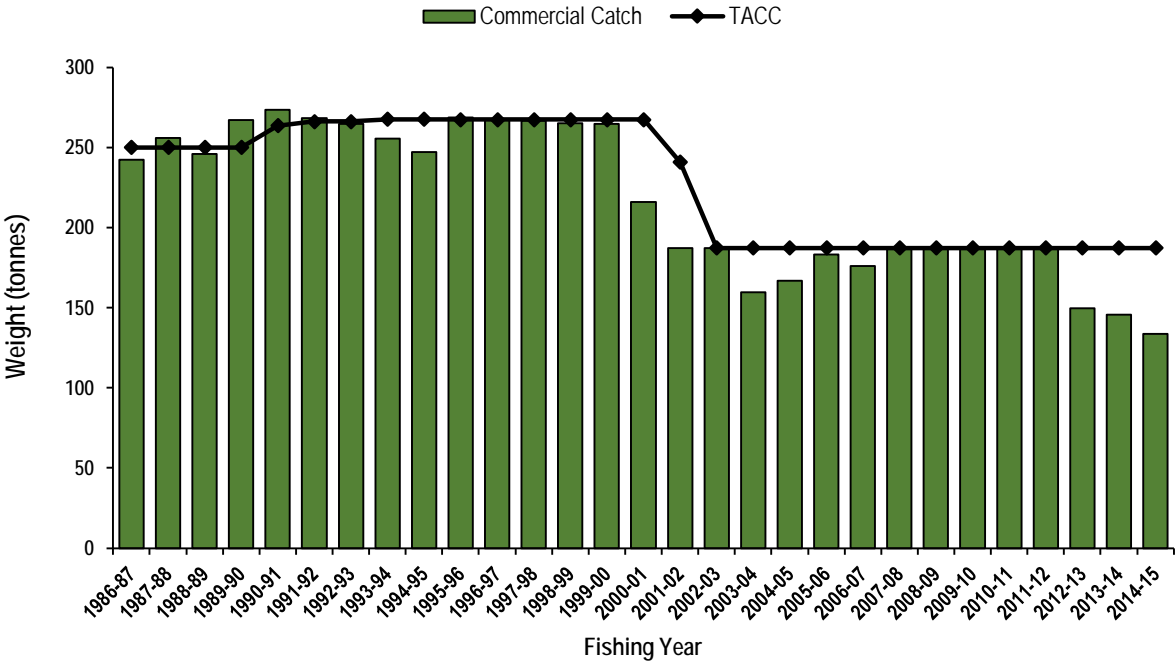


Figure 2: Landings and TACC for PAU 7 since 1986-87.

Consequently, in each of the last four fishing years (inclusive of the current 2015-16 fishing year) industry have voluntarily shelved approximately 20, 22, 28 and 28% (respectively) of available ACE to support a rebuild in paua abundance and enhance economic performance (*i.e.*, more fish in the water with less catching costs). Despite these efforts the stock is continuing to decline, with stock biomass now being below the soft limit.

The reasons for the lack of rebuild despite industry’s concerted efforts will be due to a number of environmental (natural and anthropogenic) factors, some of which cannot be controlled, as well as fishing-related factors. The current situation indicates that stronger action is required to rebuild the overall stock, and the rebuild will likely require a number of years before a significant increase in abundance is observed.

4.3 RECREATIONAL FISHERY

PAU 7 is an important shellfish fishery for the top of the South Island, especially around the Marlborough Sounds and east coast. The recreational fishery is primarily a dive fishery, although there are areas where hand-gathering from shore can occur. Anecdotal information from MPI compliance and local communities suggest some areas of PAU 7 are under intense recreational fishing pressure, particularly those areas that are more easily accessible.

Regulations¹ governing the recreational harvest of paua include a minimum legal sizes of 125 mm shell length, a recreational daily bag limit of 10 paua, and a recreational accumulation limit of 20 paua. Recreational harvest may only occur by hand gathering or free-diving. The use of underwater breathing apparatus is not permitted.

The most recent information on recreational catch is available from a National Panel Survey of recreational fisheries. The survey estimated that approximately 14.13 tonnes was harvested in PAU 7 in the 2011/12 fishing year.² It is assumed by MPI Science Working Groups that 14.13 tonnes is likely to be an underestimate of recreational harvest because shore-based gathering/diving was not well captured in the National Panel Survey methodology.

In the survey it was estimated that ~90% of paua, in PAU 7, were taken from hand gathering by diving. This was primarily recorded as occurring from boat and to a lesser extent from shore. In comparison the survey estimated only 0.1% was taken by hand gathering from shore. MPI notes that there is uncertainty in using the estimate from 2011/12 to estimate or predict current catches. An updated estimate of recreational catch is expected to be available in 2019.

The National Panel Survey does not include recreational harvest that was taken on amateur charter vessels or by commercial fishers under section 111 approvals (which provide for recreational catch on board commercial vessels).

Amateur charter vessel data is based on voluntary records since paua is not a mandatory species for catch reporting. Consequently, MPI notes there is a high degree of uncertainty in the available information. The charter vessel data available covers Fisheries Management Area 7 – *i.e.*, both PAU6 and PAU 7 (Figure 1). The best available information suggests that from 2011-12 to 2014-15 between 32 and 105 paua were harvested each year, or ~7-36 kg. However, operators do not always report all the voluntary fields (*e.g.*, catch, retained and weight).

Paua harvested under s111 of the Act must be reported. The amount of paua reported under s111 has steadily increased from 179 kg in 2010-11 to 621 kg in 2014-15.

The combined recreational harvest estimate is approximately 15 tonnes.

4.4 MĀORI CUSTOMARY FISHERY

Paua is tāonga to Māori. Being able to provide paua to feed whānau (family) or manuhiri (guests) has always been part of the cultural heritage of tangata whenua in PAU 7. Paua shells have also been used extensively for decorations and fishing devices.

Nine iwi have interests in the PAU 7 area: Rangitane o Wairau, Ngāti Apa, Ngāti Rārua, Ngāti Tama, Ngāti Kuia, Te Atiawa, Ngāti Kōata, Ngāti Toa, and Ngāi Tahu. Eight belong to the Te Tau Ihu Forum, and all to the broader Te Waka a Māui me ona Toka (TWAM) Forum. The purpose of the TWAM Forum is “to collaborate on fisheries management issues within Te Waipounamu for the benefit of present and future generations, while recognising and providing for the traditional relationship of Iwi members with their respective customary and commercial fisheries”.

¹ Fisheries (Amateur Fishing) Regulations 2013

² 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.

4.4.1 Customary fisheries regulations

The customary harvest of paua in PAU 7 is enabled under the Fisheries (South Island Customary Fishing) Regulations 1999 (customary fishing regulations). The regulations enable the taking of fisheries resources for customary food gathering purposes from South Island fisheries.

Tāngata whenua can nominate Tāngata tiaki/Kaitiaki (guardians) to authorise customary take under the customary regulations. Tāngata tiaki/kaitiaki have been appointed in an area on the west coast known as Te Tai Tapu o Mohua where the two mātaimai reserves exist.

The remaining areas in the top of the South Island are managed under regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013 (amateur fishing regulations), which allow customary harvest to be authorised for the purposes of hui or tangi.

4.4.2 Customary harvest

Reporting of customary harvest is a management tool for Tangata Tiaki/kaitiaki to manage customary fisheries and also for MPI to manage each fishstock. Under the customary fishing regulations, it is mandatory for customary fishers to report actual catch to the authorising Tāngata tiaki/kaitiaki, who reports back to MPI on a three-monthly basis. Where amateur regulations apply, customary take is only required to be reported back to the permit authoriser if it is specified on the permit.

Records indicate that about 200 to 5500 paua were reported to have been collected each year from 2001–02 to 2014–15, with an average of 1700 pieces each year (or 0.68 t). MPI notes that between 2010–11 and 2012–13 the number of paua approved for harvest declined by about half (from >3000 to <1500), and for half of the 2014–15 fishing year only 100 paua. About 70% of the customary harvest information that has been reported was taken from Port Underwood, Queen Charlotte Sound, and Tory Channel.

These figures should be interpreted with caution as the information reporting on these authorisations do not necessarily represent the full potential or actual harvest of customary fishing. There is no reporting requirement for much of the PAU 7 area and the Te Tau Ihu Forum report that a precautionary approach is used when issuing authorisations because of their perception that the fishery is under pressure.

4.4.3 Mātaimai reserves and taiāpure

Mātaimai reserves can be established over traditional fishing grounds to recognise and provide for customary food gathering by Māori and the special relationship between tangata whenua and places of importance for customary food gathering. Taiāpure can be established in areas that have customarily been of species significance to an iwi or hapu as a source of food, or for spiritual or cultural reasons.

Within PAU 7 there is one taiāpure (Whakapuaka (Delaware Bay) Taiāpure) and two mātaimai reserves - Te Tai Tapu (Kaihoka) and Te Tai Tapu (Anatori). MPI notes that the proposals in this paper will not impact on the taiāpure and mātaimai reserves, nor will the mātaimai or taiāpure reserves affect the options proposed.

4.5 OTHER SOURCES OF FISHING-RELATED MORTALITY

There are various potential other sources of fishing-related mortality of paua, but MPI is not able to quantify these precisely. Sources may include unseen mortality caused by fishing and illegal catch.

4.5.1 Incidental mortality

Sub-legal paua may be subject to handling mortality by the fishery if they are removed from the substrate to be measured. Paua may die from wounds caused by removal, desiccation or osmotic and temperature stress at the surface or indirectly from being returned to unsuitable habitat or being lost to predators or bacterial infection. Research in PAU 7 suggests that incidental mortality associated with commercial fishing was 0.3% of landed catch³.

4.5.2 Illegal catch

MPI has estimated that illegal catch may be around 7.5 tonnes for PAU 7, however this number is highly uncertain. Illegal fishing can include a variety of unlawful activities such as mis- and under-reporting of catch and areas where paua are caught, poaching and the sale of paua on the black market, use of underwater breathing apparatus, taking paua below the 125 mm MLS limit, and harvesting above recreational bag limits. All of these activities have the potential to raise the actual level of extraction. Illegal fishing can have a direct impact on the sustainability of paua stocks and affects all paua fishers.

The allowance for other sources of fishing related mortality is currently set at 1.6% of the TACC (3 tonnes). MPI considers this value is an underestimate of the likely contribution of other sources of fishing-related mortality in the PAU 7 fishery, which should be amended in the setting of catch limit allowances.

4.6 PREVIOUS REVIEW

The TAC for PAU 7 was last reviewed in 2002. The review resulted in an approximately 20% reduction in the TAC and TACC for the 2002-03 fishing year. The TAC was decreased from 273.73 tonnes, to 220.24 tonnes. The TACC was decreased to 187.24 tonnes, from 240.73 tonnes. Māori customary fishing and recreational allowances were retained at 15 tonnes each. The allowance for other sources of fishing-related mortality remained at 3 tonnes.

4.7 NEW INFORMATION

The best available information on the status of the PAU 7 fishery that can be used to inform TAC setting for PAU 7 is the 2015 PAU 7 stock assessment⁴. Stock status is assessed in relation to the target reference point (40% of unfished biomass – B_0), the soft limit (20% B_0), the hard limit (10% B_0) and estimated exploitation rates.

The 2015 assessment estimates the PAU 7 stock biomass to be somewhere between 16-21% B_0 with 95% confidence, with the greatest chance of being at 18% B_0 (refer to Figure 3). This abundance level sits below 20% B_0 , the soft limit for the fishery. The soft limit represents the level of stock biomass where the requirement for a formal time-constrained rebuilding programme for the fishery is triggered (guided by the MPI Harvest Strategy Standard).

³ Gerring, PK (2003) Incidental mortality of paua (*Haliotis iris*) in PAU 7. New Zealand Fisheries Assessment Report 2003/56. 13 p.

⁴ Fu, D. (2016). The 2015 stock assessment of paua (*Haliotis iris*) for PAU 7. (Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries.) 51 p.

The assessment estimates that PAU 7 is about as likely as not (40 to 60%) to be below the soft limit. If fished at the current TAC and TACC the stock will continue to decline.

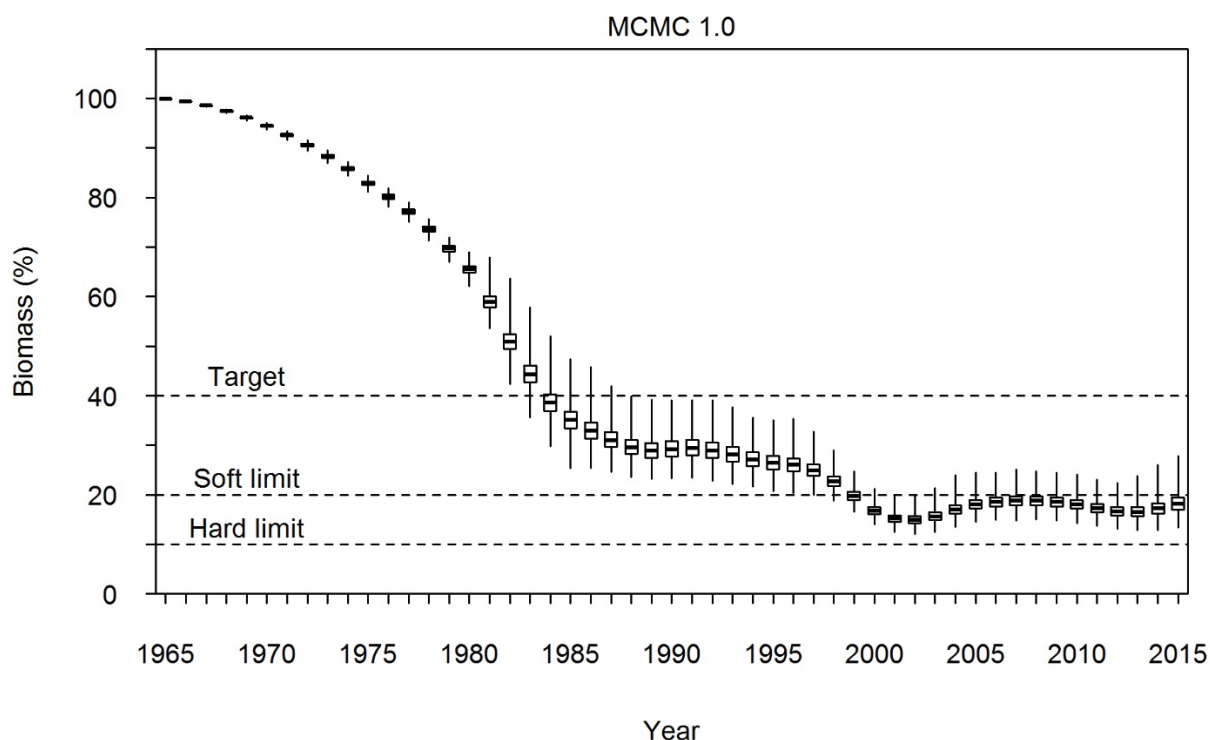


Figure 3: Posterior distributions of spawning stock biomass as a percentage of virgin (unfished) level from the base case model used in the stock assessment.

Model projections, under two alternative catch level scenarios, indicate that lower catch levels increase the chance and speed of rebuilding the stock (Table 2). Alternative model projections can be reviewed in the 2015 stock assessment report⁵.

All projections estimate that biomass is likely to increase under each scenario. However, the larger catch reductions have a greater probability of resulting in increased biomass and a much lower probability that biomass will continue to remain below the soft limit.

The projections suggested that if future recruitment remains at long term average, the spawning stock abundance will increase to 23% (17-30%) of B_0 with a 40% TACC reduction, or 25% (19-32%) of B_0 with a 60% TACC reduction.

However, if future recruitment is lower than the longer term average, the projected spawning stock abundance would not increase as much, and there would be a greater probability of staying below the soft limit under the same catch reduction scenarios.

It is extremely unlikely that the spawning stock biomass will be above the target (40% B_0) in the short term under any scenario of catch reduction. If current catch remains the same for the future and recruitment is below average, the probability of the spawning stock biomass in 2018 being below the soft limit (20% B_0) will be greater than 50%.

⁵Fu, D. (2016). The 2015 stock assessment of paua (*Haliotis iris*) for PAU 7. (Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries.) 51 p.

Table 2: Summary of key indicators from the projections (to 2018) for the base case stock assessment model under two catch reduction scenarios.

2018 Projections	40% reduction	60% reduction
Biomass (tonnes)	990 (759–1274)	1068 (838-1353)
%B ₀	0.23 (0.17–0.30)	0.25 (0.19-0.32)
%B _{MSY}	0.88 (0.65–1.15)	0.95 (0.72-1.22)
Probability of future spawning biomass being greater than B _{MSY} .	0.17	0.3268
Probability of the future spawning biomass being greater than the current amount of biomass.	0.98	0.9972
Probability of the future spawning biomass being above the target of 40% B ₀ .	0.00	0.0002
Probability of the future spawning biomass being below the soft limit of 20% B ₀ .	0.15	0.05
Probability of the projected biomass being below the hard limit of 10% B ₀ .	0.00	0
Probability that the current exploitation rate (U) is greater than the exploitation rate that will achieve the target of 40% B ₀ .	0.98	0.3346

MPI notes that uncertainty in the stock assessment model projections increase as projections are extended beyond three years. For this reason the Shellfish Working Group does not recommend extending projections further than three years into the future.

Sensitivities to data and uncertainties were tested and indicate that the above conclusions are robust to the range of assumptions tested.

5 Legal Considerations

5.1 SETTING MANAGEMENT MEASURES

The TAC for PAU 7 can be varied under section 13 of the Fisheries Act 1996. Section 13(2) of the Act specifies requirements for setting a TAC where a reliable estimate of the current biomass of the stock and the level of biomass that can produce the maximum sustainable yield (B_{MSY}), is known. In cases such as PAU 7, where there is some uncertainty around the estimates of B_{MSY}, section 13(2A) of the Act provides for the Minister to use the best available information 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.

MPI considers the options presented in this paper are not inconsistent with the requirements under section 13(2A) that the stock should be managed at or above B_{MSY}, or moving the stock towards or above B_{MSY} (as discussed in section 3.2 above).

5.2 INPUT AND PARTICIPATION

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 met with the Te Tau Ihu Forum in March 2016 to discuss the assessment information, projections and aspirations for the fishery that have been used to inform the proposals. The

forum's input has been incorporated in the options described in this document, as well as in the section on recreational controls. The Forum noted their concerns on stock status and their actions to manage harvest in a precautionary manner, and in consideration of other potential risks that may affect abundance in the fishery (e.g., forestry/deforestation, sedimentation, and the potential for increased recreational catch should a recreational fishing park be established).

The forum's initial position on a variety of issues are noted within this paper.

5.3 ENVIRONMENTAL PRINCIPLES

When making a decision concerning the TAC for a stock under section 13(2A), the Minister must have regard to interdependence of stocks, the biological characteristics (discussed earlier) and any environmental conditions affecting the stock.

Sections 9(a) and (b) 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.

Associated or dependent species are defined by the Act as any non-harvested species (those that may not be taken with lawful authority) taken or otherwise affected by the taking of any harvested species. The method for commercial harvest of paua is hand-gathering while freediving. Catch Effort Landing Return data indicates that there is no bycatch of any associated or dependent species in this fishery.

There is limited information to provide an assessment of the effects of the paua fishery on either biological diversity or associated and dependent species. There is evidence of an interdependence relationship between paua, kina, and seaweeds. The continued loss of large paua from reefs by fishing may have a localised displacement effect on kina and seaweeds. The effects of this displacement on the inshore benthic community structure are unknown.

No habitats of particular significance for fisheries management have been identified within PAU 7. It is considered unlikely that the method of hand-gathering would have a demonstrable adverse effect on habitat.

6 Proposed Response

The management of the PAU 7 stock at high levels of abundance has been supported by all fishing sectors and MPI. The low catch-per-unit effort in the commercial fishery and observed declines in biomass are compromising this management approach, which could have consequences for all users of the fishery.

Consequently, MPI proposes the following options for the upcoming fishing year (Table 3):

Table 3: Proposed TACs, TACCs, and allowances for PAU 7 (all values in tonnes)

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Māori	Recreational	Other sources of fishing-related mortality
Option 1 (<i>Status quo</i>)	220.24	187.24	15	15	3
Option 2	152	112	15	15	10
Option 3	115	75	15	15	10

6.1 OPTION 1

Under Option 1, the existing TAC would be retained. The TACC and allowances (customary Māori, recreational and other sources of fishing-related mortality) would be retained in line with the *status quo*.

This option would not allow a rebuild in the fishery and the existing TAC and TACC, if fully fished, would result in a further decline in paua abundance. Given the fishery is estimated to be about as likely as not below the soft limit (where a rebuilding plan is triggered) this option does not provide for such action nor meet the Minister's obligation to set a TAC that:

- enables the level of the stock whose current level is below that which can produce MSY to be altered in a way and at a rate that will result in the stock being restored to or above a level that can produce MSY, having regard to the interdependence of stock, and within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting it, or
- is not inconsistent with the objective of moving the stock towards or above a level that can produce MSY.

Impact

Option 1 provides the great level of use of PAU 7 by all sector groups. However, this option is also likely to compromise the sustainability of the stock, impact the longer term social, economic and cultural benefits the stock could provide, and does not account for the likely greater other sources of fishing-related mortality that are occurring.

6.2 OPTION 2

Option 2 proposes:

- The TAC be reduced from 220.24 tonnes to 152 tonnes, representing a 35% reduction.
- The TACC be reduced from 187.24 tonnes to 112 tonnes, representing a ~40% reduction.
- The Māori customary allowance would be retained at 15 tonnes.
- The recreational allowance would be retained at 15 tonnes.
- The allowance for other sources of fishing-related mortality would be increased from 3 tonnes to 10 tonnes.

Option 2 proposes a decrease to the TAC and TACC, with the exception of the other sources of fishing-related mortality allowance that would be increased. The Māori customary and the recreational allowances would be retained. This option recognises the best available

information that biomass is about as likely as not below the soft limit and that a formal rebuild plan should be implemented.

MPI considers that Option 2 meets the requirements to support a rebuild of the fishery based on the stock assessment model projections. There is an approximate 15% probability that stock abundance may remain below the soft limit in three years. Under this Option we estimate stock biomass will be at 23% B_0 in 2018 (refer to Table 2).

Māori customary

No changes are proposed to the Māori customary allowance. While best available information suggests that the current settings more than provide for current levels of catch. However, MPI notes the uncertainty in customary harvest levels due to existing reporting requirements. The allowance for customary use is not set to constrain catch but to recognise and provide for customary food gathering.

MPI notes that the Te Tau Ihu Forum were strongly opposed to any reduction in customary allowance. The forum noted that they are well positioned to manage the existing allowance accordingly based on stock status, their local knowledge, and with a more holistic approach based on their interests and participation in all sectors of the fishery (customary, recreational and commercial). The Forum note that they manage their allowances under their own principles of kaitiakitanga.

Recreational

No changes are proposed to the recreational allowance. MPI notes that the Te Tau Ihu forum considered that any reduction to the TACC should be applied pro rata to the recreational allowance. This option does not provide for such a reduction.

Best available information suggests that the recreational allowance is not being exceeded based on available data; however MPI notes that the information estimate is likely to be an underestimate of overall recreational harvest, but the degree to which is unknown.

Other sources of fishing-related mortality

MPI considers that other sources of fishing-related mortality are not adequately captured or provided for in the existing 3 tonne allowance. Previous research in PAU 7 estimated that incidental mortality associated with fishing in PAU 7 was 0.3% of landed catch, which would equate to <0.5 tonne. However, the current allowance doesn't consider or allow for any mortality associated with illegal take. Given the uncertainty associated with such mortality, MPI proposes to increase the allowance to 10 tonnes.

Commercial

Option 2 proposes an approximate 40% decrease to the TACC. Decreasing the TACC will reduce commercial use opportunities and economic benefits derived from the fishery.

The effectiveness of Option 2 could be strengthened if there was a commitment by the paua industry to shelve an additional proportion of annual catch entitlement until at the end of the 2019-20 fishing year. The next stock assessment for PAU 7 will be published in 2020 and those results will indicate to what degree stock abundance has increased.

Shelving of quota, in lieu of TACC reductions, has been used in PAU 7 on multiple occasions over the last 15 years. There was a strong commitment and effort by a majority of quota holders to shelve ACE over the last four years, which resulted between 20 and 30% of ACE being left in the water each year.

Shelving may not be appropriate in the context of this fishery, given the rate of rebuild is anticipated to be a long-term process. The TAC setting has to be the primary tool to ensure sustainability, and to rebuild the stock at a way and rate the Minister considers appropriate. However, industry are free to choose to rebuild the stock faster by shelving additional quota if they wish. The shelving of additional quota by fishers may serve as a useful adjunct to the TACC reduction to improve the probability or speed of a rebuild.

During pre-consultation discussions, the Te Tau Ihu forum noted they were in favour of a hybrid catch reduction scenario that would include a partial TAC and TACC reduction supported by additional shelving of ACE. The Te Tau Ihu Forum noted that when shelving programmes are put in place they should be compulsory to all quota holders and be supported by strong governance arrangements.

The paua industry has indicated they are not in favour of continuing shelving arrangements in this fishery at this time and are seeking stronger action to support a rebuild of the fishery.

Impact

Based on the \$23.98 per kilogram 2016/17 port price, a 75.24 tonne decrease in commercial catch is worth approximately \$1.8 million annually to fishers.

While it is expected that biomass will increase over time under this option, ongoing monitoring will be required, in conjunction with the next stock assessment (currently scheduled for 2019-20) to determine when any review of the TAC will occur.

6.3 OPTION 3

Option 3 proposes:

- The TAC be reduced from 220.24 tonnes to 115 tonnes, representing a ~44% reduction.
- The TACC be reduced from 187.24 tonnes to 75 tonnes, representing a 60% reduction.
- The customary Māori customary allowance would be retained at 15 tonnes.
- The recreational allowance would be retained at 15 tonnes.
- The allowance for other sources of fishing-related mortality would be increased from 3 tonnes to 10 tonnes.

Option 3 proposes a much larger decrease to the TAC and TACC, with the exception of the other sources of fishing-related mortality allowance that would be increased. This option recognises the best available information that biomass suggests the stock is about as likely as not below the soft limit and that a formal rebuild plan should be implemented.

MPI considers that Option 3 meets the requirements to support a rebuild of the fishery based on stock assessment projections. However, in comparison to Option 2, there is a lower probability (approximately 5% versus 15%) that stock abundance would remain below the soft limit in three years. Under this Option we estimate stock biomass will be at 25% B_0 in 2018 (refer to Table 2).

MPI considers that Option 3 is the preferred approach to rebuilding the fishery; *i.e.*, to apply significant catch limits reductions that provide much greater certainty or probability that the stock abundance will move above the soft limit in a shorter time period. Given the stock has been below target for nearly 20 years, MPI consider a faster rebuild rate is appropriate than

that provided for under Option 1 or 2. The value of a fishery that reaches target level more quickly include increased catch rates, associated cost efficiencies, potential for greater use benefits across all sectors much sooner. Greater stock abundance in a shorter time period also improves stock resilience to other anthropogenic or environmental factors that could negatively impact on stock health.

Māori customary

As with Option 2, no changes are proposed to the Māori customary allowance. While best available information suggests that the current settings more than provide for current levels of catch.

Recreational

The retention to the recreational allowance, consistent with Option 2, recognises that best available estimates harvest levels are provided for under the current allowance.

Other sources of fishing-related mortality

MPI considers that other sources of fishing-related mortality is not adequately captured or provided for in the existing 3 tonne allowance. As discussed in Option 2, given the uncertainty associated with such mortality, MPI proposes to increase the allowance to 10 tonnes.

Commercial

Option 3 proposes an approximate 60% decrease to the TACC. This level of reduction will have a much greater impact on commercial use opportunities and economic benefits derived from the fishery than Option 2. Pre-consultation discussions with the paua industry have signalled the industry is supportive of meaningful catch limit reductions that are likely to result in an increase in abundance.

Impact

Based on the \$23.98 per kilogram 2016/17 port price, a 112.24 tonne decrease in commercial catch is worth approximately \$2.7 million annually to fishers.

While it is expected that biomass will increase over time under this option, ongoing monitoring will be required, in conjunction with the next stock assessment (2019/20) to determine when any review of the TAC will occur.

7 Other Matters

7.1 DEEMED VALUES

Deemed values are an economic tool that incentivises commercial fishers not to catch in excess of their individual annual catch entitlements. A discussion of the deemed value rates for PAU 7 is included in the accompanying consultation document “Review of Deemed Value Rates for Selected Stocks”.

7.2 RECREATIONAL CONTROLS

MPI considers the uncertainty and likely underestimate of recreational harvest levels in the PAU 7 fishery are important to note. There is potential that recreational harvest is exceeding the current allowance, however, there is insufficient information to determine the degree of any additional harvest. The National Panel survey provides the best estimate and

methodology available to estimate recreational harvest for PAU 7. The next National Panel survey estimates are likely to be available in 2019-20.

MPI notes that while the National Panel survey will likely provide the best estimates, the methods do not capture what may be a reasonable proportion of recreational users in the area (*e.g.*, temporary workers, tourists etc.). Any improvements that can be made to the methodology to potentially improve the estimates will be considered before the start of the next survey.

During pre-consultation discussions there was a significant interest in developing a shared fisheries approach to support the rebuild of PAU 7 – *i.e.*, shared pain/shared gain. The Te Tau Ihu forum supported any reductions proposed to the TACC to be applied pro rate to the recreational allowance with additional controls. Commercial representatives were also supportive of establishing a shared fisheries engagement approach with recreational to review what additional measures could be considered going forward to ensure the fishery rebuilds.

Although the proposed options do not propose changes to the recreational allowance, for any TAC reduction to be effective, fish need to stay in the water. A portion of the large volumes of puaa remaining in the water (through TACC reductions), will be taken as part of increased recreational harvest (rather than support stock recruitment and rebuild). While recreational catch will increase over time as the stock rebuilds, the increase in catch will likely take place over a few years. MPI intends to investigate additional management controls using the shared fisheries and multi-sector forum approach in the PAU 7 fishery over the next couple of years to ensure any rebuild of the stock is not undermined by increasing recreational catch.

The issue for the future will be whether additional harvest controls are required to constrain recreational take to their allowance while the fishery rebuilds.

8 Conclusion

Available information suggests that current abundance is low and there is a need for catch limit reductions to occur to support a rebuild of the fishery.

Retaining the status quo (Option 1) does not meet the requirements to support a rebuild of the fishery, but provides for the greatest level of use across all sectors. However, the benefits derives are likely to be short-lived resulting in a further reduction to available biomass.

Two options for decreasing the TAC are proposed for 1 October 2016. These options recognise the low abundance in PAU 7 and propose different levels of reduction that vary in the level of socio-economic impacts and the likelihood (probability) of seeing an increase in stock abundance in the next three years. The larger the catch limit reduction the greater the likelihood of seeing growth in the fishery. However, this must be considered against the proposed decreases to the TACC, which are significant. Under Option 2 the proposed TACC reduction is ~40%, whereas under Option 3 it is 60%. The difference in lost potential harvest value between the two options is approximately \$0.9 million.

It is proposed that alongside decreases to the TACC the allowance for other sources of fishing-related mortality increase to 10 tonnes under both Option 2 and 3. This change will better capture potential illegal harvest and incidental mortality that may be occurring in the fishery.

No changes are proposed to the Māori customary or recreational allowance as best available information suggests that current settings will provide for current levels of catch.

While no changes are proposed to the recreational allowance, MPI is seeking information and views on recreational harvest in PAU 7 and additional measures that may be considered to support a rebuild in the fishery through a local area management approach. Any such measures would require further engagement with tangata whenua and stakeholders in 2016.

MPI is seeking information and views from tangata whenua and stakeholders to support the development of final advice to the Minister on management settings for PAU 7 for the fishing year commencing 1 October 2016.

It is important to note that the Minister has broad discretion in exercising his powers of decision-making. The Minister will make his own independent assessment of the information presented to him before making a final decision on varying a TAC, allowances and TACC.