Ministry for Primary Industries
Manatū Ahu Matua

Review of Management Controls for the Bluenose Fishery (BNS 1, 2, 3, 7 & 8) in 2016

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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

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

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Bluenose (BNS 1, 2, 3, 7 & 8)

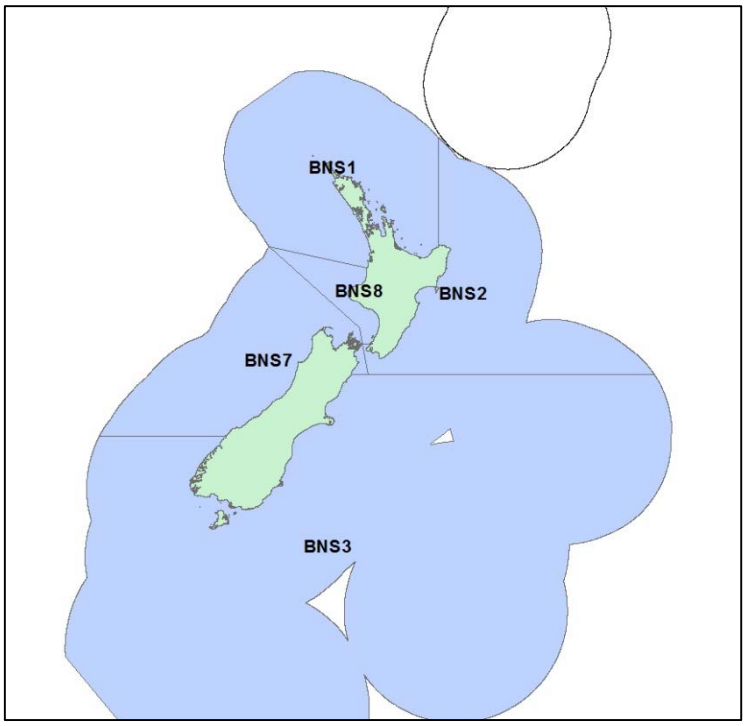


Figure 1: Quota management areas (QMAs) for the bluenose fishery

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 for bluenose (*Hyperoglyphe antarctica*, matiri) in quota management areas (QMAs) BNS 1, 2, 3, 7 and 8 (see Figure 1).[1] Bluenose in these areas are assessed and managed as a single stock.

Table 1 outlines current management settings alongside two options for reductions to the combined bluenose TAC and TACC.

Table 1: Proposed management settings (combined TACs, TACCs, and allowances) for bluenose for 2016/17 (all values in tonnes)

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 (*Status quo*)	1195	1100	9	63	23
Option 2	990	900	9	63	18
Option 3	704	620	9	63	12

Following on from management actions in 2011 and 2012, MPI considers a further catch limit reduction is needed to meet the objectives of a rebuilding plan that was initiated in 2011, when the national stock was assessed to be between 14 and 27% of the virgin biomass (B_0) compared to the default target of 40% B_0.

[1] BNS 10 has a TACC of 10 tonnes and a reported catch of 30 kg.

The objective of the rebuild is to reach the 40% target by 2031-2037 (within 2 x T_{MIN}[2] from the 2011 assessment). A decision was made to defer planned catch reductions in 2013 to allow for further investigation of new monitoring information that suggested biomass may have been increasing at a higher rate than anticipated. That monitoring information, as well as further information from 2014 and 2015, has now been reviewed and incorporated into an updated stock assessment. The stock assessment indicates that action to date has resulted in the biomass decline either levelling off or biomass gradually increasing. The assessment estimates the stock to currently be between 17 and 27% and provides updated projections to support further management decisions.

The projections suggest that the *status quo* TAC and TACC will not achieve the rebuilding plan objectives and poses a greater sustainability risk to the stock than Options 2 and 3. MPI therefore does not support the *status quo* (Option 1). Options 2 and 3 reduce the combined TAC and TACC for the upcoming fishing year by approximately 20% and 40% respectively. The two levels of reductions provide different levels of certainty about putting the stock on course to achieve the rebuild target within the time frame. Option 2 is considered an interim option designed to solidify the rebuild currently occurring, while a new management procedure is developed to guide long term management of the stock. Further management action will likely be required under this option for the 2017/18 fishing year. Option 3 implements the last phase of the rebuild strategy put in place in 2011 and is designed to rebuild the stock to the target level without further management action.

Given the value of the bluenose fishery, MPI considers that there would be benefits in doing further work to determine the best way to manage and monitor bluenose over the longer term to achieve the rebuild objectives. For example, in recent years the industry has led investigation into the potential application of a management procedure (MP) to provide decision rules and greater certainty. MPI would like to continue work in this area and considers that an MP could be available to inform a review in 2017. Under both options it is initially proposed that the reductions would be spread proportionally across the five management stocks.

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 suggests that under current management settings the bluenose stock is unlikely to be on course to achieve the rebuilding target set in 2011, and as a result a further reduction to catch limits should be considered. The target agreed by the Minister in 2011 was 40% B_0 in 20-26 years.

Since 2011, the stock has been monitored annually. Updated CPUE analyses were incorporated into an updated stock assessment which was accepted by the Science Working Group in 2016. The updated stock assessment indicated that the decline in the bluenose stock has either levelled off or that it is rebuilding slowly. The assessment estimated the current biomass to be between 17 and 27% of B_0. The associated biomass projections suggest that

[2] Twice the length of time that it has been estimated that the stock would reach the target in the absence of fishing.

further reductions to catch limits are likely needed in order to reach the rebuilding target of 40% B_0 within the chosen time frame (2 x T_{MIN}).

With a clearer picture of what is happening in the bluenose stocks, MPI is now consulting tangata whenua and stakeholders on how best to continue the rebuilding of the bluenose fishery.

3.2 MANAGEMENT APPROACH

A formal harvest strategy is not yet developed for bluenose but in the interim, the *Harvest Strategy Standard* default proxy for B_{MSY} for low productivity stocks (like bluenose) is being applied. That default proxy is 40% B_0.[3] The *Draft Operational Guidelines for New Zealand's Harvest Strategy Standard*[4] (the *HSS Guidelines*) set out the recommended time frame for such rebuilding plans. The target time frame is described relative to the time that it would take the stock to return to the target level in the absence of fishing (T_{MIN}). The *HSS Guidelines* suggest the plan should allow stocks to be rebuilt to the target level between T_{MIN} and 2xT_{MIN}.

The management approach to bluenose changed in 2011 when a stock assessment indicated that the combined TAC for the five bluenose QMAs were unsustainable. The 2011 stock assessment assumed a single biological stock for bluenose and estimated the biomass to be between 14 and 27% of the virgin biomass (B_0 – the average biomass of the stock in the years before the fishing started). This indicated that the bluenose stock size (B_{2011}) was below the proxy target for B_{MSY} (40% B_0)[5] and as Likely as Not (40-60%) to be below the Soft Limit (20% B_0).[6] The then Minister of Fisheries and Aquaculture agreed to a plan aimed at rebuilding bluenose stocks to the target within 2xT_{MIN} (20-26 years). This involved a three-year phased reduction to catch limits (see Table 2). The first and second stages were implemented, with reductions to TACs, TACCs, some allowances and changes to recreational bag limits,[7] and increases to deemed values to incentivise fishers to balance catch with annual catch entitlement (ACE).

In 2013 the Minister decided to maintain the existing catch limits and not to implement the third phased TAC and TACC reductions. This decision was taken on the basis of new information which suggested that the biomass was increasing at a rate higher than anticipated. This decision allowed new information to be considered and analysed through MPI's scientific peer review processes. This monitoring information as well as more data from 2014 and 2015 have now been reviewed and incorporated into an updated stock assessment. It should be noted that the current management approach relies strongly upon catch per unit effort (CPUE) data from the commercial fishery to provide an index of bluenose relative abundance, to support monitoring of the effectiveness of the rebuild measures. Further catch reductions may result in changes to fishing practices, such as the withdrawal of vessels and changes in the spatial and temporal distribution of fishing effort. This may disrupt the continuity of the CPUE series and affect the ability to monitor the fishery effectively using this method. MPI considers that there would be benefits in doing further work to determine the best way to manage and monitor bluenose over the longer term regardless of decisions on management settings for the 2016/17 fishing year. However, the decisions in 2016 will have an impact on how this management discussion proceeds.

[3] MPI has accepted 40% B_0 as the target for bluenose pending further discussion with stakeholders.
[4] Ministry of Fisheries, 2008.
[5] Fisheries Assessment Plenary, May 2015, Stock Assessments and Stocks Status Volume 1: Introductory Sections to Hoki. http://fs.fish.govt.nz/Page.aspx?pk=61&tk=212
[6] Rebuild strategies are recommended by the *HSS* and associated guidelines when stock declines below the soft limit.
[7] The limit is now 5 for all areas. The change came into effect in May 2012.

Table 2: 2011 Rebuild Plan – TACs, TACCs and allowances, by year (all values in tonnes)

Year	Total Combined TAC	Total Combined TACC	Total Combined **Customary Māori** Allowances	Total Combined Recreational Allowances	Total Combined other sources of fishing-related mortality
2010/11	2477	2325	42	63	47
2011/12	1685	1580	9	63	33
2012/13 (Current Settings)	1195	1100	9	63	23
2013/14 (Not implemented)	704	620	9	63	12

4 Background Information

4.1 BIOLOGICAL CHARACTERISTICS OF BLUENOSE

Bluenose is a long-lived species, with an estimated maximum age of 76 years, and has a low natural mortality.[8] These biological characteristics indicate that bluenose is a low productivity stock.

Males and females are thought to mature around 15 to 17 years of age and lengths between 60 and 65cm. Spawning probably peaks from February to April, annually. No distinct spawning grounds have been identified for bluenose in New Zealand waters.

Bluenose distribution ranges from near surface to depths of 1200 metres, with numbers highest at around 400 metres depth. Depth distribution changes with size, with individuals generally moving to deeper waters as they grow. Bluenose may also migrate to shallower waters during the day to feed.

This paper assumes a single biological stock for bluenose in New Zealand waters. Biological stock boundaries are not known for New Zealand bluenose, but similarities in CPUE trends between each of the five bluenose QMAs suggests there may be just one biological stock across all these areas, or a strong relationship between the fish in these areas. Tagging studies have shown the species is capable of extensive migration, which suggests the single stock hypothesis is plausible. However, there is no conclusive information available to confirm this hypothesis or alternate hypotheses of stock relationships.

4.2 COMMERCIAL FISHERY

Total reported landings of bluenose by the commercial sector are shown below in Figure 2. These data are broken down by QMA in Figure 7 (Appendix 1). The commercial fishing sector harvests the greatest amount of bluenose, followed by substantially smaller amounts taken by recreational and customary fishers.

[8] The Plenary considers natural mortality rate, M, is unlikely to be great than 0.1.

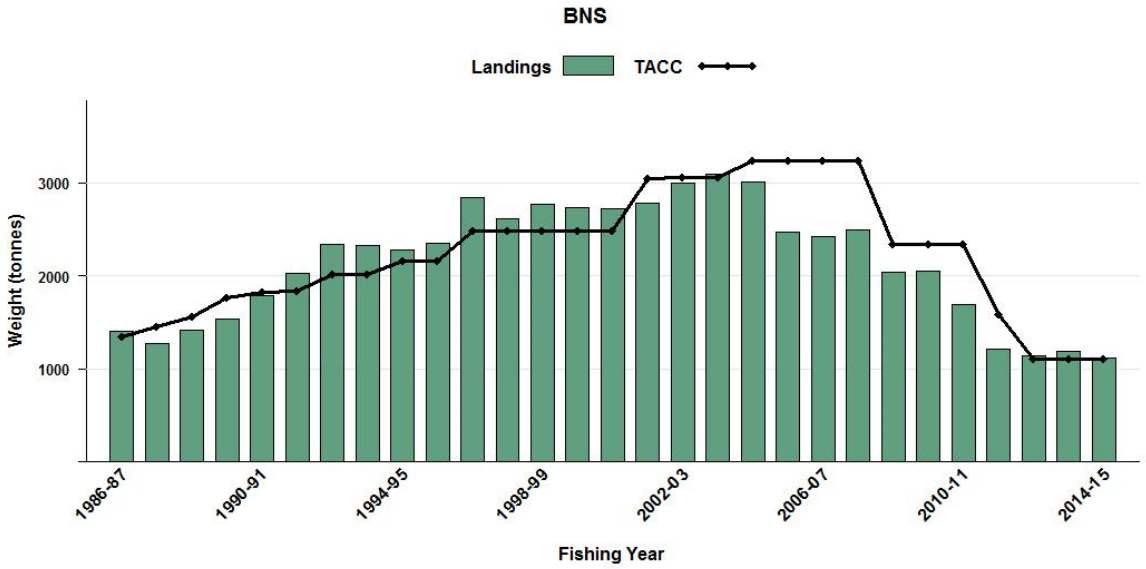


Figure 2. Total reported landings (t) of bluenose and total TACCs (t) from 1986-87 to 2014-15 for BNS 1, 2, 3, 7 and 8.

The largest domestic bluenose fisheries occur in BNS 1 and 2. Historically, catches in BNS 2 were predominately taken in the target alfonsino and bluenose trawl fisheries, but have been primarily taken by target bottom longline fishing in recent years. There is a target line fishery for bluenose in the Bay of Plenty (BoP) and off Northland (BNS 1). Target line fisheries for bluenose also exist off the west coast of the South Island (BNS 7) and the central west coast of the North Island (BNS 8). Bluenose in BNS 7 are also taken as bycatch in the hoki trawl and ling line fisheries. The BNS 3 fishery is focussed on the eastern Chatham Rise where bottom longline catches were historically a bycatch of ling and häpuku target fisheries. Target bluenose lining has predominated since 2003-04. There has been a consistent bycatch of bluenose in the alfonsino target bottom trawl fishery and bluenose have been targeted sporadically in a mid-water trawl fishery in BNS 3 since the early 2000s. The bottom trawl fishery in BNS 3 has diminished. A small amount of target setnet fishing for bluenose occurred in the Bay of Plenty until 1999 and has occurred again since 2012. Target bluenose setnet fishing also occurs sporadically in the Wairarapa region of BNS 2. Setnet catches and off the east coast of the South Island have been a mix of target and bycatch in ling and häpuku target sets and off the east coast of the South Island have been a mix of target and bycatch in ling and häpuku target sets.

Between 1992 and 2009, all bluenose fishstocks were included, for at least some of the time, in Adaptive Management Programmes (AMPs). The goal of the AMPs was to increase commercial utilisation in low knowledge stocks while providing a cost-effective way of obtaining more information on stock size. Bluenose TACCs were increased under the AMPs. Commercial harvest levels were identified as a key driver of the decline in stock abundance. The Plenary noted other drivers such as recruitment and environmental factors may also have contributed.

4.3 RECREATIONAL FISHERY

Bluenose is primarily targeted by recreational fishers around deep inshore reefs. Anecdotal information from Recreational Forum members suggests recreational fisher interest in

bluenose has increased in recent years. Regulations[9] governing the recreational harvest of bluenose from stocks include a daily bag limit of 5 per person for all areas that has been in place since 2012.

The total combined recreational allowances for all bluenose QMAs is 63 t. The best available information on current recreational catch is provided from the 2011/12 National Panel Survey (NPS) which estimated the total recreational catch in BNS 1, 2, 3, 7 and 8 was 34.8 t.[10] However the NPS did not take into account recreational harvest that was taken on board amateur charter vessels. The best available information is that around 1000 bluenose were retained by charter vessels from all areas for each of the past three fishing years (2012-15). This equates to approximately 10 t per year from all QMAs.[11]The NPS estimate also does not include bluenose taken using recreational methods on commercial vessels with authorisation from MPI under s111 of the Fisheries Act 1996 (the Act). Any catch taken in this manner must be reported. Approximately 1 t per year has been reported over the last five years, for all areas.

The amateur charter vessel and s111 catches are broadly distributed proportionally across QMAs.[12] An estimate based on the 2011/12 NPS, plus the average amateur charter vessel and s111 catches (from the last few years) is around 46t. This is within the 63 t combined recreational allowances. MPI notes that there is uncertainty in using the estimate from 2011/12 to estimate or predict current catches. A new NPS is due to begin in 2017 which will provide updated estimates of recreational bluenose catches. MPI considers that at this time there is no new information to suggest recreational allowances should be changed.

4.4 MĀORI CUSTOMARY FISHERY

Bluenose is an important kaimoana species for tangata whenua. Information currently held by MPI on Māori customary catch of bluenose in many areas is limited. For those tangata whenua groups operating under the kaimoana customary fishing regulations[13], there is a requirement for Tangata Kaitiaki/Tiaki to provide MPI with information on Māori customary harvest of fish. However, some tangata whenua are still operating under regulation 50-52 of the Fisheries (Amateur Fishing) Regulations 2013, and it is not mandatory to report permits that are issued.

There is one reported authorisation for BNS 7 in the Cook Strait for the April-June 2011 quarter; the quantity approved was 30 (with no unit of measure given) and no actual quantity harvested was declared. There is also one reported authorisation for BNS 3 for the October-December 2012 quarter; the quantity approved was one (also with no unit of measure) and it was declared as harvested. No other customary authorisations have been reported for bluenose in any QMA since 2007. This indicates that tangata whenua use of customary Māori harvesting rights for taking bluenose is nominal. MPI is working to improve the reporting of information on customary harvest.

Before making a decision about changing the TAC, the Minister is required to provide for the input and participation of tangata whenua and to have particular regard to kaitiakitanga (s12 (1) of the Act).

[9] Fisheries (Amateur Fishing) Regulations 2013

[10] The estimates for bluenose are based on a relatively small number of events and fishers, and as a result are subject to a relatively high uncertainty. They also do not include amateur catch taken on charter vessels or by commercial fishers under s111 approvals.

[11] Assuming an average weight of 10kgs per fish.

[12] Bar the charter catch for BNS 7 which is proportionally higher.

[13] Fisheries (Kaimoana Customary Fishing) Regulations 1998 and Fisheries (South Island Customary Fishing) Regulations 1999.

MPI's intention to review bluenose catch limits was discussed at two Chatham Island iwi forums this year and has been discussed previously at iwi forums operating around New Zealand as part of the implementation of the 2011 plan. Given the timing that the new stock assessment became available (May 2016), it has not yet been discussed with iwi forums and will be as soon as possible.

Given the distribution and behaviour of bluenose, mātaitai closures and section 186 closures are unlikely to have any bearing on bluenose harvest and the associated options presented in this paper.

4.5 OTHER SOURCES OF FISHING-RELATED MORTALITY

There are various potential other sources of fishing-related mortality of bluenose, but MPI is not able to quantify these precisely. Sources may include the under-reporting of landings, discarding to avoid deemed value payments and unseen mortality caused by particular fishing methods. The allowance for other sources of fishing-related mortality is currently set at 23t, around 2% of the TACC. For options 2 and 3, the allowance is varied accordingly, at 18 and 12 t respectively.

4.6 PREVIOUS REVIEW

Bluenose TACs were last reviewed in 2013. In October 2013, the combined TACs remained at 1195 t, the combined TACC remained unchanged at 1100 t and the combined allowances for other sources of fishing-related mortality remained at 23 t. The combined customary Māori allowances and recreational allowances remained unchanged, at 9 t and 63 t, respectively. The 2013 review did not implement the final TAC reduction as set out in the rebuilding plan, because there was new CPUE data that suggested further reductions may not have been needed at the level proposed. That information has since been further analysed and supplemented. Currently the best available information is an updated stock assessment produced in 2016.

4.7 NEW INFORMATION

Stock Assessment

The 2016 stock assessment provides the best available information on stock status and how future stock size is expected to change under different catch levels. The stock assessment was updated in 2016 to include the most recent data on catch and CPUE. The 2016 assessment confirms the results of the 2011 assessment and suggests that the combined bluenose stocks are As Likely as Not (40 to 60%) below the soft limit of 20% B_0 and Very Unlikely (<10%) at or above the default target of 40% B_0 (see Figure 3). $B_{CURRENT}$ is estimated to be between 17% and 27% of B_0. For these pre-2016 biomass trajectories, a combination of scenarios were modelled to address the uncertainty in historical catch levels (low, medium and high), natural mortality rates (0.06, 0.08, 0.10) and stock recruitment steepness (0.75 and 0.9). Stock recruitment steepness determines the relationship between the biomass of mature fish and the strength of the recruitment they can produce. Natural mortality is the rate loss of fish from a stock due to non-fishing causes, such as predation and old-age. The biomass trajectories reveal that the TAC reductions made previously have resulted in biomass decline either levelling off or biomass gradually increasing, as shown in Figure 3.

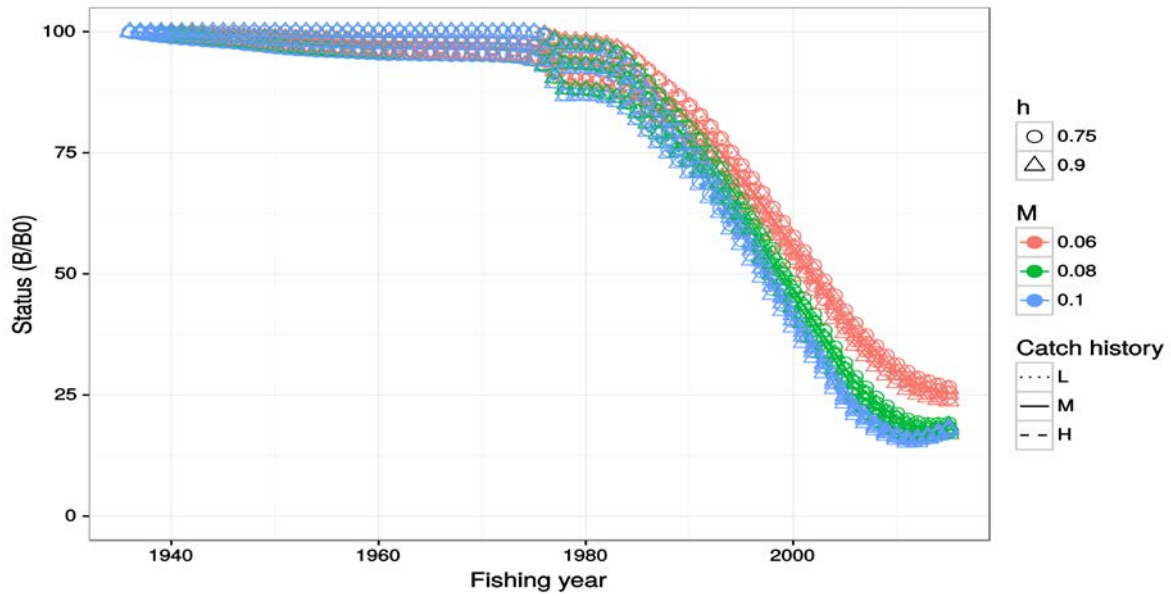


Figure 3. Stock status estimates up to 2015 under different estimates of catch history, natural mortality and stock recruitment steepness.

Projections from 2015 were also completed to explore biomass trajectories under different future catch levels for the three options presented in this paper (1100, 900 and 620 t). The projections under these three options are shown in Figures 4, 5 and 6.

The aim of the projections was to explore rebuilding times for the three TACC options. Uncertainty was incorporated using alternative values for stock recruitment steepness (h), natural mortality (M) and catch history (see above). The projections were tested against the previously agreed rebuilding rate which was based on the stock biomass attaining 40% B_0 (the interim target biomass) within $2xT_{MIN,}$ starting in 2011. The matrix of projections for T_{MIN} from the 2011 assessment is shown in Table 3. This shows the projected rebuild date for each set of parameters in Figures 4, 5 and 6, which would be two times the number indicated in the matrix. This gives the range of 2031-2037, indicated by dotted lines in Figures 4, 5 and 6.

There is inherent uncertainty in catch histories for all species. To reflect this, low, medium and high levels of historic catch were used in the model runs. As these catch histories made little difference to the projections, the medium catch history was used for T_{MIN} and future catch projections (Table 3 and Figures 4, 5 and 6).. No combination of parameters is considered more plausible than the others. As demonstrated, there is a spread of uncertainty associated with each of the catch levels proposed in the options.

Table 3: Matrix from 2011 BNS assessment – shows TMIN for each set of M and h for mid-catch history

		Steepness of stock recruit relationship (h)	
		0.75	0.9
Natural mortality (M)	0.06	13	12
	0.08	13	12
	0.1	11	10

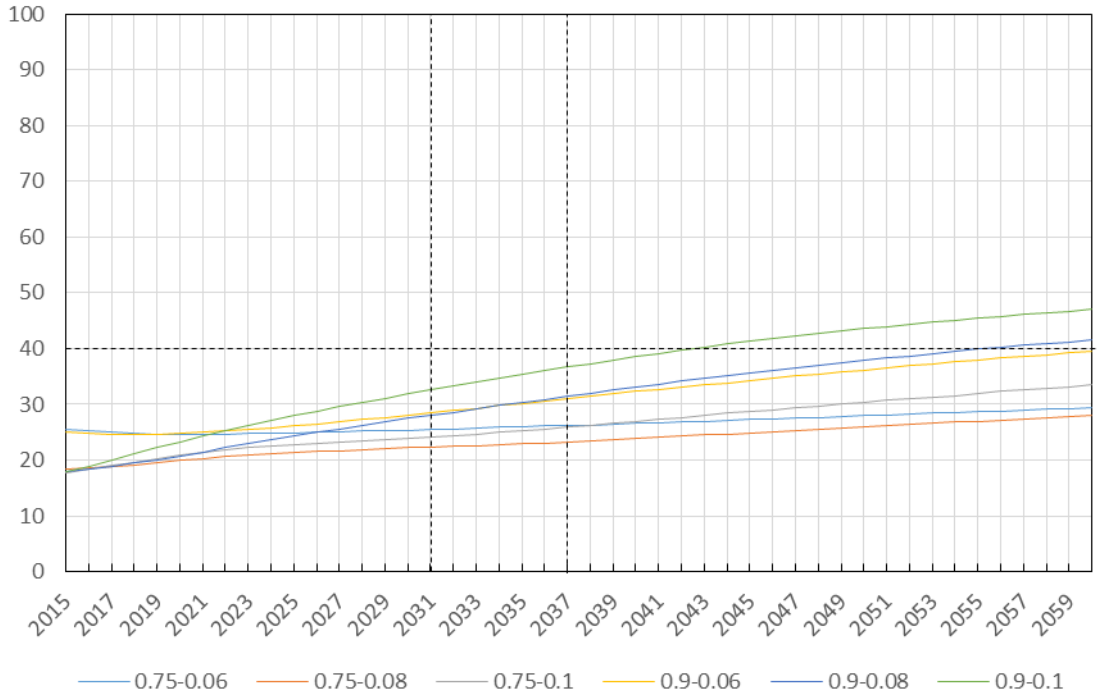


Figure 4: Stock status (% B_0) trajectories for 1100 t TACC (Option 1), under each of 6 combinations of stock-recruitment steepness and natural mortality, using mid-level catch histories. Target biomass is indicated by the horizontal dashed line. Target timeframe falls within the two vertical dashed lines.

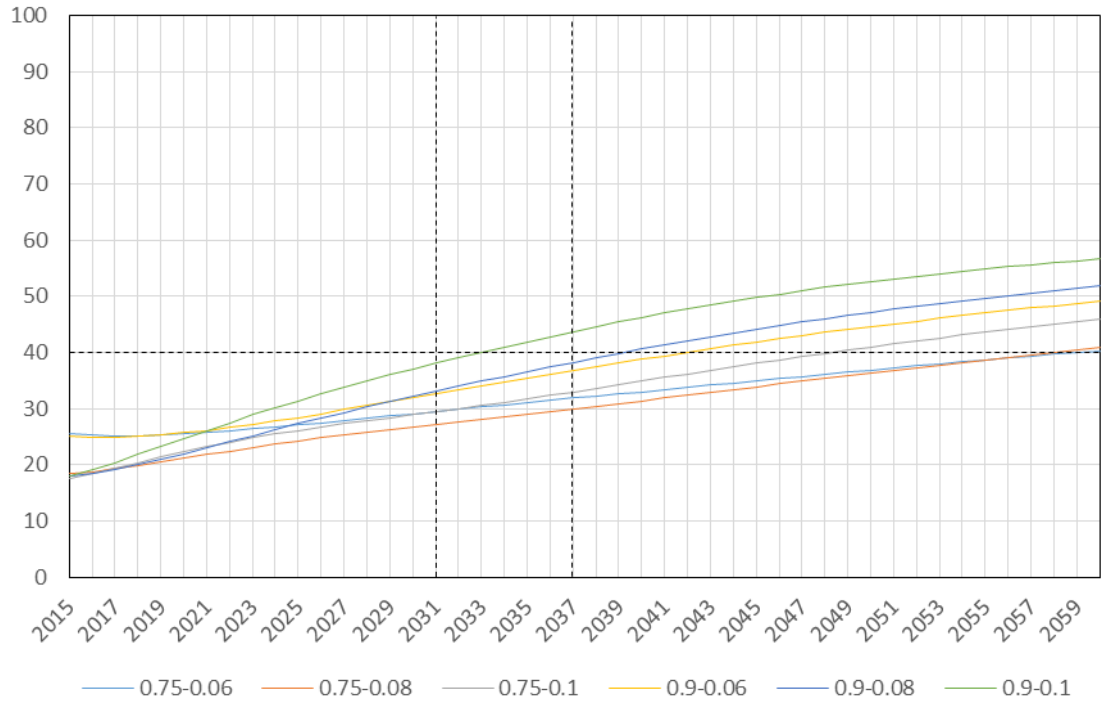


Figure 5: Stock status (% B_0) trajectories for 900 t TACC (Option 2), under each of 6 combinations of stock-recruitment steepness and natural mortality, using mid-level catch histories. Target biomass is indicated by the horizontal dashed line. Target time frame falls within the two vertical dashed lines.

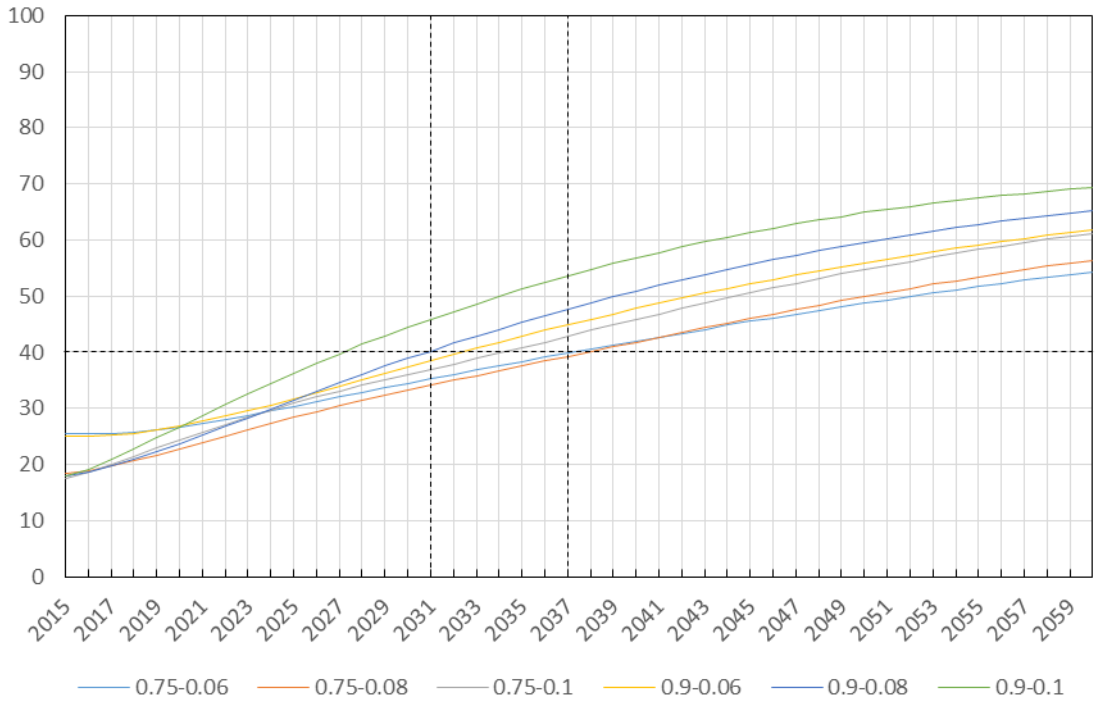


Figure 6: Stock status (% B_0) trajectories for 620 t TACC (Option 3), under each of 6 combinations of stock-recruitment steepness and natural mortality, using mid-level catch histories. Target biomass is indicated by the horizontal dashed line. Target time frame falls within the two vertical dashed lines.

Management Procedure to Guide the Rebuild

Since 2011, Fisheries Inshore New Zealand (FINZ) has worked with BNS quota owners to develop a Management and Monitoring Plan for bluenose that could continue the rebuild.

As part of the management plan industry has implemented a new catch sampling programme, aimed at better understanding recruitment.

In 2016, FINZ presented a Management Procedure (MP) for consideration by the Science Working Group. The scientific aspects of the procedure were accepted, but MPI considers further development will be needed before an MP could be adopted to guide the setting of catch limits for bluenose.

Industry and MPI are interested in the application of MPs as they have specific advantages. MPs provide a greater degree of management responsiveness through the use of decision rules, which in turn can provide greater certainty that management objectives are met.

5 Legal Considerations

5.1 SETTING MANAGEMENT MEASURES

The TAC for a stock, such as bluenose, can be varied pursuant to 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 bluenose, where current B_{MSY} is 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, 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 FURTHER CONSIDERATIONS

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. As discussed previously in this paper, MPI will seek to provide further opportunities for input and participation prior to the development of final advice.
When setting or varying the TAC relating to stocks with boundaries intersecting with the Hauraki Gulf Marine Park, the Minister shall have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (HGMPA):

- Section 7 recognises the national significance of the Hauraki Gulf, including its capacity to provide for the relationship of tangata whenua and the social, economic, recreational and cultural wellbeing of people and communities
- Section 8 of the HGMPA sets out the objectives of the management of the Hauraki Gulf, which include the maintenance or, where appropriate, the enhancement of the Gulf for social and economic wellbeing, and its contribution to the recreation and enjoyment, of the people and communities of the Gulf and New Zealand.

MPI notes that there is limited bluenose catch within the Hauraki Gulf Marine Park. MPI considers that the proposed TAC options provide for the above outcomes and are consistent with these sections of the HGMPA.
When making a decision concerning the TAC for a stock under section 13(2A) of the Act, 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) 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 bluenose fishery are discussed below with reference to the likely impacts of the proposed management options.

5.2.1 Seabirds, mammals, and protected species

Bluenose is preyed upon by other fish species, such as broadbill swordfish. The significant decline in bluenose biomass may be having an impact on predator species like broadbill swordfish, subject to the availability of alternative food sources. A decline in abundance may also affect other complex interactions within the ecosystem. For example, bluenose is likely to be an important predator, feeding on tunicates, fish, squid and crustaceans. A change in predation pressure may alter competitive interactions between these species. MPI cannot quantify the scale of the impact of low abundance of bluenose on species interactions, but rebuilding bluenose stocks should improve any existing imbalance.

According to bluenose longline fishermen, depredation of hooked BNS by orca had increased recently. Future analysis of observer data would inform this potential issue.

Bluenose is taken by target bottom longline fisheries throughout the New Zealand Exclusive Economic Zone (EEZ). Incidental captures of seabirds occur in the bottom longline and setnet

fisheries, including black petrel in FMA 1 and 2, that are ranked as at very high risk in the Seabird Risk Assessment.[14]

5.2.2 Benthic impacts

Bluenose is taken in conjunction with alfonsino in target midwater trawl fisheries directed at the latter species and in target bluenose bottom trawl fisheries. These fisheries are frequently associated with undersea features. MPI has no evidence to suggest bluenose fisheries have a negative impact on benthic habitats.

6 Proposed Response

As bluenose has been assessed as being below the target, the primary management objective of this TAC review is to consider how to continue rebuilding the stock size. MPI considers setting TACs for BNS 1, 2, 3, 7 and 8 at a combined level that will allow the stocks to rebuild to 40% B_0 is consistent with section 13 of the Act.

In line with the rebuild measures to date, MPI proposes that any catch reduction is spread proportionally across the TACs (and TACCs) for all the QMAs. However, there are other choices that could be made for how the reduction is spread across QMAs. The catch limits and allowances under each of the proposed options, spread proportionally by QMA, are shown in Table 4.

Table 4: Proposed TACs, TACCs and allowances for BNS 1, 2, 3, 7 and 8 by stock (all values in tonnes)

				Allowances		
Stock	Option	TAC	TACC	Customary	Recreational	Other mortality
BNS 1	1 (*status quo)*	425	400	2	15	8
	2	351	327	2	15	7
	3	251	230	2	15	4
BNS 2	1 (*status quo)*	474	438	2	25	9
	2	392	358	2	25	7
	3	279	247	2	25	5
BNS 3	1 (*status quo)*	194	171	2	18	3
	2	162	140	2	18	2
	3	114	93	2	18	1
BNS 7	1 (*status quo)*	69	62	2	3	2
	2	57	51	2	3	1
	3	40	34	2	3	1
BNS 8	1 (*status quo)*	33	29	1	2	1
	2	28	24	1	2	1
	3	20	16	1	2	1

Option 1 is the *status quo*. None of the projections based on this TACC reached the target within 2 x T_{MIN} (Figure 4). Therefore, MPI considers that a catch reduction is likely required in order to achieve the rebuild target set out in the *HSS* and agreed by the Minister in 2011.

Option 2, with a TACC of 900 t, is intended as an interim option. It provides more certainty that the stock will continue to rebuild, but is not in and of itself intended to rebuild the stock

[14] The risk was defined as the ratio of the estimated annual number of fatalities of birds due to bycatch in fisheries to the Potential Biological Removal (PBR), which is an estimate of the number of seabirds that may be killed without causing the population to decline below half the carrying capacity (Richard & Abraham, 2013).

to the target level within the timeframe proposed by the *HSS*. Under this option work would be undertaken on a management procedure which would inform future management. The TAC would also be reviewed again in 2017/18 in line with the outcome of the management procedure (if accepted) or to ensure rebuild of the stock within the timeframe specified by the *HSS* if the management procedure is not accepted. Option 2 would have some socio-economic impact, but to a lesser degree than Option 3.

Option 3 is the third planned reduction in catch limits under the 2011 plan, and has a combined TACC of 620 t. The projections based on these TACCs are shown in Figure 6 and demonstrate that there is greater certainty that the rebuilding target will be achieved under this option. However, implementing this option may mean that the targeted commercial bluenose fishery could cease. The management of the fishery would likely be reviewed again in the medium term, perhaps in 5 years.

MPI also recognises that other options could be chosen, from the full range of scenarios.

Economic Indicators

To frame the options set out below, the nature of the economic impact to each bluenose fishery is suggested by looking at the current indicators of the value of the fishery. Table 5 (Appendix 2) shows the port[15], export, ACE and quota prices for 2014/15, while Table 6 (Appendix 2) demonstrates the projected potential changes in landings revenue in 2016/17. These assume the total TACC is being caught in each QMA.

6.1 OPTION 1

Option 1 (*status quo*) sets out the current TAC, TACC and allowance for fishing-related mortality as follows:

- Retain the combined TAC of 1195 tonnes;
- Retain the combined TACC of 1100 tonnes;
- Retain the combined allowance for other sources of fishing-related mortality of 23 tonnes (around 2% of TACCs), and;
- Make no changes to allowances for Māori customary and recreational interests.

Option 1 is not supported by MPI. At this combined TAC, the 2016 stock assessment projections suggest this option will not result in the stock rebuilding to the target within the timeframe (Figure 4). The sustainability risk to the stock is therefore highest under Option 1. It may delay the rebuild, and the stock will likely remain at lower levels for longer than under Options 2 and 3. This may mean that further reductions will be required in the future.

15 Port price is the surveyed average price paid by licensed fish receivers ('LFRs') to independent fishers for fish landed to those LFRs, as set or updated by rule 12 of the Fisheries (Cost Recovery) Rules 2001 (see rule 3: Interpretation). The following limitations are known about port prices: survey replies may be skewed because industry know they are used to set cost recovery levies; does not differentiate harvest method – fish caught by one method over another may command a price premium; ownership structure can influence port price – port prices change depending on whether the LFR is catching and landing the fish themselves, using contract fishers or taking fish from an independent fisher; does not reflect price differential for different grades of fish – fishers receive different landed prices depending on the size of the fish caught.

6.2 OPTION 2

Option 2 proposes to:

- Reduce the combined TAC from 1195 tonnes to 990 tonnes;
- Reduce the combined TACC from 990 tonnes to 900 tonnes;
- Reduce the allowance for other sources of fishing-related mortality would be reduced to 18 tonnes;
- Make no changes to allowances for Māori customary and recreational interests.

Option 2 reduces TACs and TACCs by approximately 20%. Option 2 proposes a level of utilisation that is lower than Option 1 and therefore more likely to support the stock to increase, but is still unlikely to achieve the target within the rebuilding time frame. MPI considers that while Option 2 is more likely to put the stock on course to achieving the rebuild than the *status quo*, it would need to be supported by further work in the short term to ensure that rebuild objectives are met. Only one projection based on the 900 t TACC achieved the target within the time frame (Figure 5). Compared with the *status quo*, Option 2 has higher short-term costs. It proposes a 200 t reduction from the TACC, worth around $1 million.[16] In comparison, the larger reduction under Option 3 (discussed below) has short-term costs of approximately $2.6 million (see Table 6). In addition to the loss in revenue illustrated by these economic indicators, there will also be potential effects on the nature of the commercial fishery such as whether it is viable for some operators to continue fishing with certain methods in certain areas. In general these effects will be greater under Option 3 than under Option 2, and are discussed below.

6.3 OPTION 3

Option 3 proposes to:

- Reduce combined TAC from 1195 tonnes to 704 tonnes;
- Reduce combined TACC from 1100 tonnes to 620 tonnes;
- Reduce the allowance for other sources of fishing-related mortality to 12 tonnes;
- Make no changes to allowances for Māori customary and recreational interests.

Option 3 reduces TACs and TACCs by approximately 40%. Option 3 is the most cautious option in regards to sustainability. The proposed combined TACC of 620 t is consistent with the final reduction from the rebuilding plan decided in 2011. The 2016 stock assessment and projections indicate that the proposed catch level is consistent with achieving the rebuild. Figure 6 demonstrates that there is greatest certainty of meeting the rebuild target and timeframe under this catch limit than under Options 1 and 2. Reaching the target is likely to result in greater sustainable yields, higher catch rates, and stocks being better buffered against environmental vulnerabilities.

However, compared with Options 1 and 2, Option 3 has the highest short-term costs; 480 t would be cut from the combined TACC, representing a loss of around $2.6 million.[17] There would also be wider effects on the nature of the bluenose fishery. In 2014/15, 100 fishers landed bluenose. For the majority of these fishers (82%), bluenose made up less than 10% of their total landed catch weight. This suggests the most fishers currently taking bluenose are not overly dependent on bluenose landings and may be able to absorb the impact of the proposed reductions. However, for some fishers, bluenose landings represent a significant proportion of their catch and income. In 2014/15, there were 10 fishers for whom bluenose

[16] Based on port price. These figures should be taken as comparative only, as TACCs may not be fully caught.
[17] Based on port price. These figures should be taken as comparative only, as TACCs may not be fully caught.

represented over 30% of the weight of their total landed catch. The reduction in the availability of ACE is likely to force these fishers to either target other stocks or stop fishing altogether. Many affected fishers may initially transfer effort to other long-line fisheries. In response to previous consultations it was noted that with long-line catches of hapuku/bass and ling already being a high proportion of the TACCs in these fisheries, there is little capacity in those fisheries to absorb transfer of effort from the bluenose fishery.

Reducing the combined total TACC to 620 t is likely to reduce target bluenose fishing in most areas and may impact bluenose bycatch fisheries in some areas. In recent years, for some bluenose stocks (BNS 3 and BNS 7), bycatch levels were close to or exceeded the proposed TACCs under both Option 2 and 3. This could mean target fisheries such as hoki, ling, alfonsino and hapuku/bass are constrained by the availability of bluenose ACE. MPI is not able to quantify this impact on target fisheries where bluenose is a bycatch. MPI notes if bycatch exceeds the TACCs this could impact the time frame required for rebuilding bluenose stocks.

The TACC reductions proposed in Options 2 and 3 will likely lower the overall quota value of the bluenose fisheries in the short-term. However, if the management strategy is viewed as positive and likely to lead to better catches in the future (and possible TACC increases), then quota prices may increase over the medium to long-term.

Under Option 3, the stock is projected to meet the rebuild target within the time frame under almost all scenarios, which will likely give greater sustainable yields and higher catch rates in a shorter time than under Options 1 and 2. However, the targeted fishery may cease and the socio-economic impact would be significant.

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. Deemed value rates for bluenose were considered within the accompanying consultation document "Review of Deemed Value Rates for Selected Stocks" but no changes are proposed.

7.2 RECREATIONAL CONTROLS

There is no information to suggest a change to recreational controls would be needed and no changes to the recreational daily bag limit are proposed.

8 Conclusion

The best available information based on the 2016 stock assessment suggests that the combined bluenose stocks are As Likely As Not (40 to 60%) below the soft limit of 20% B_0 and Very Unlikely (<10%) at or above the default target of 40% B_0.[18] The information also indicates that the bluenose stock biomass decline has levelled off or biomass is slowly increasing, but that it is unlikely to reach the rebuilding target level under current management settings.

[18] Current biomass was estimated by the stock assessment to be between 17 and 27% B_0.

Option 1 is the *status quo* with no changes to current management settings. MPI does not support this option as the best available information suggests that under this option the stock is unlikely to achieve the rebuilding target within the time frame and further reductions will likely be required in the future.

Option 2 proposes new management settings that recognises the need for a catch reduction, but allows for a level of utilisation that is higher than the significant reductions proposed under Option 3. This option is also not likely to achieve the rebuilding target within the time frame and MPI considers that it should only be considered in conjunction with further work in the short term to determine how best to achieve the rebuild.

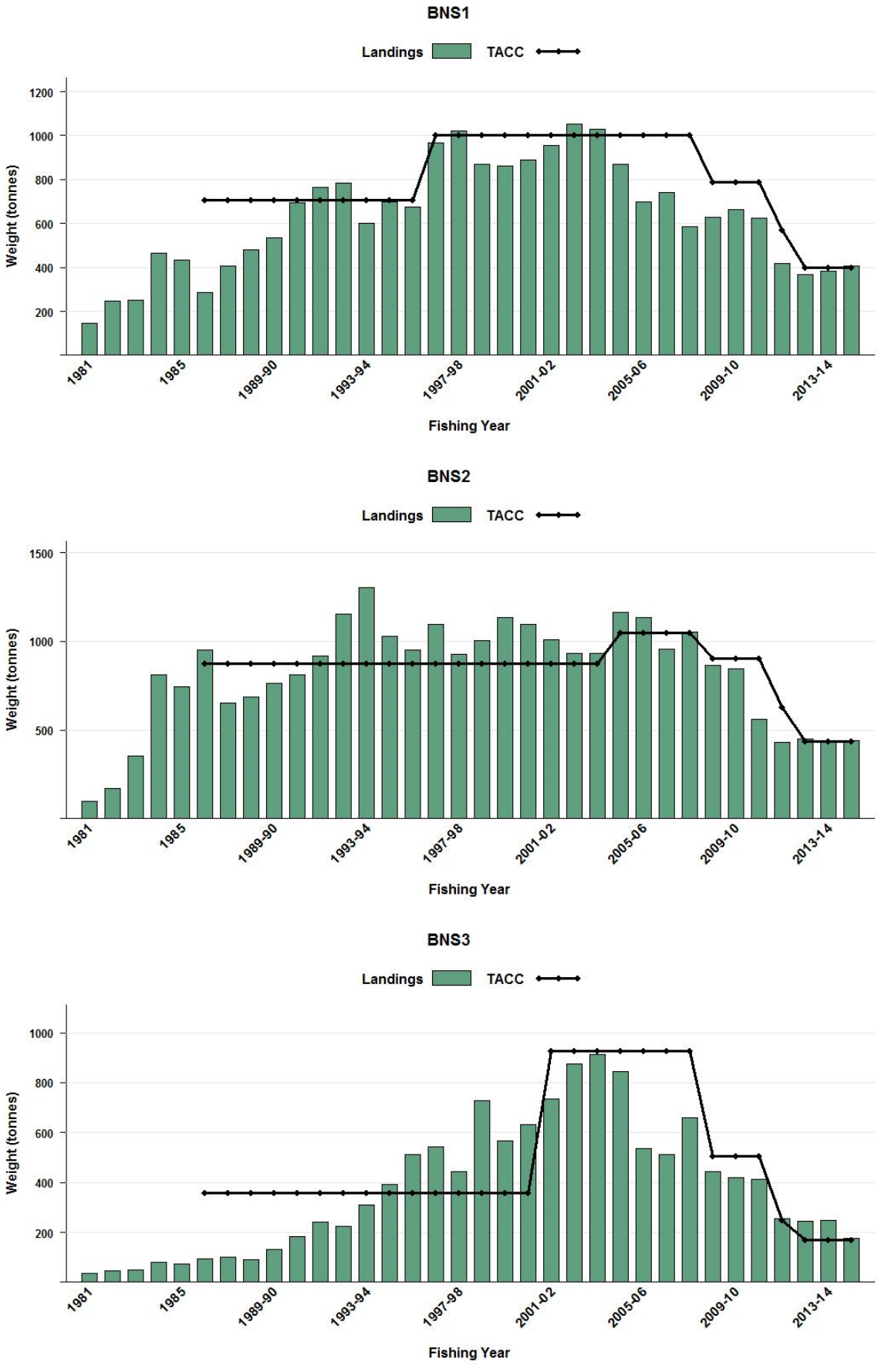
Option 3 proposes continuing the 2011 rebuilding plan and reducing TAC and TACC limits to 704 t and 620 t respectively. This is consistent with the 2011 plan and is predicted to result in the rebuilding target and time frame being met under most scenarios, but will have a significant socio-economic impact.

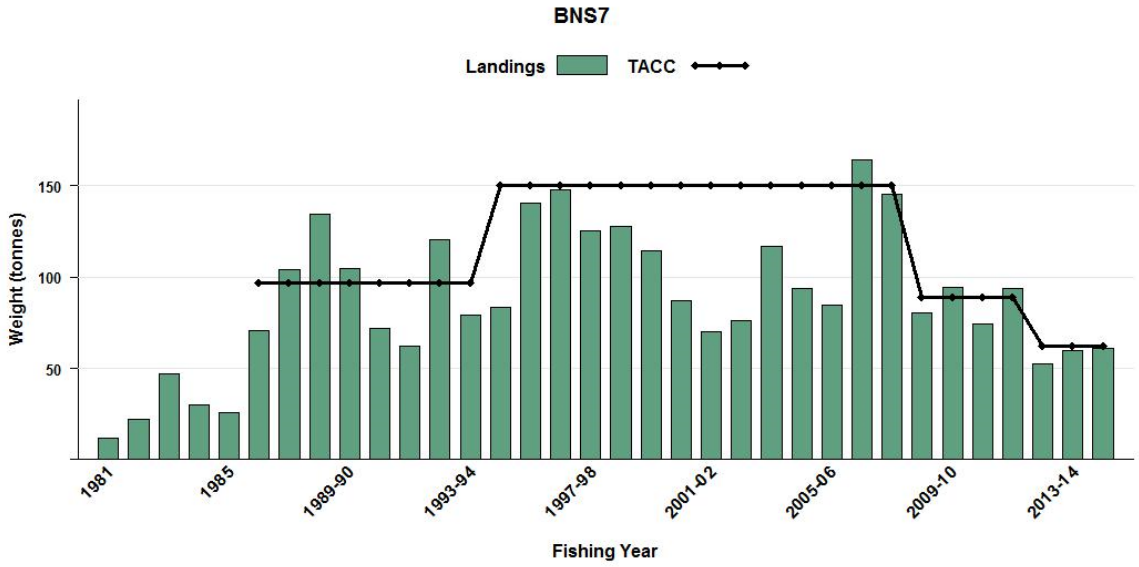
MPI is seeking tangata whenua and stakeholder views and information to inform the review of catch limits for BNS 1, 2, 3, 7 and 8 for the fishing year commencing 1 October 2016. In particular, MPI is seeking information about the extent of the likely impacts of the three options presented in this paper, both for bluenose as a whole, and for each area (BNS 1, 2, 3, 7 and 8). In addition, MPI is seeking information about the appropriate allocation of any further reduction in catch limits across BNS 1, 2, 3, 7 and 8.

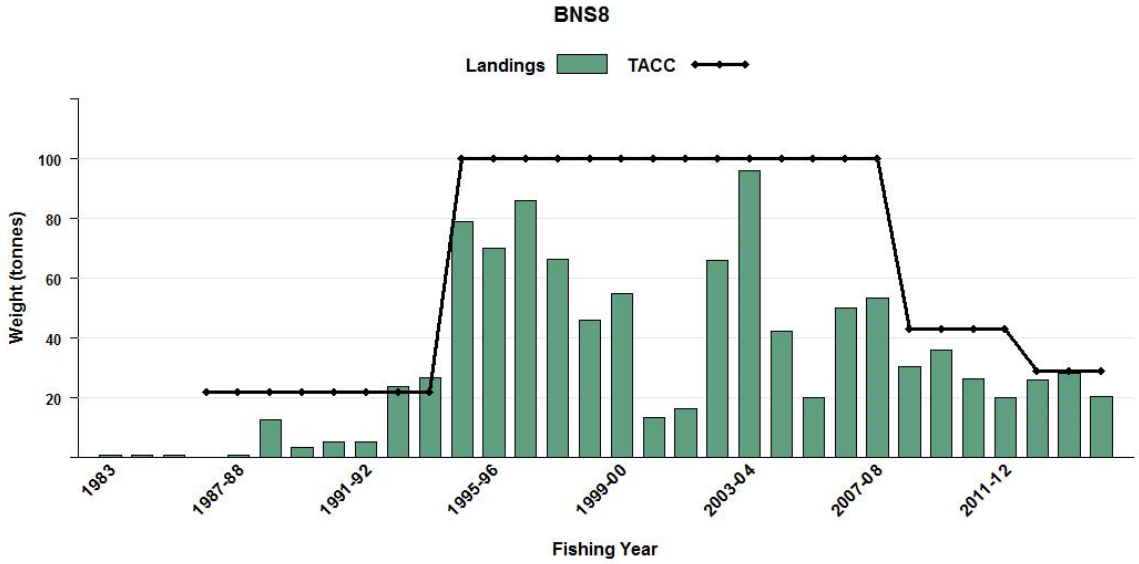
It is important to note that the Minister has broad discretion in exercising his powers of decision-making. He will make his own independent assessment of the information presented to him before making a final decision on varying a TAC, allowances and TACC.

APPENDIX 1 – CATCH INFORMATION

Figure 7: Bluenose catch (tonnes) versus TACC (tonnes) by QMA and fishing




BNS7
Landings
TACC
Weight (tonnes)
150
100
50
1981
1985
1989-90
1993-94
1997-98
2001-02
2005-06
2009-10
2013-14
Fishing Year


BNS8
Landings
TACC
Weight (tonnes)
100
80
60
40
20
1983
1987-88
1991-92
1995-96
1999-00
2003-04
2007-08
2011-12
Fishing Year

APPENDIX 2 – SOCIO-ECONOMIC INFORMATION

Table 5: Current indicators of the economic value of the BNS fisheries

QMA	2014/15 Port Price ($/kg)	2014/15 Export Price ($/kg)*	2014/15 ACE Price ($/kg)**	2014/15 Quota Price ($/kg)***
BNS 1	$6.46	$10.53	$2.16	$23.93
BNS 2	$5.40	$10.53	$2.30	$19.39
BNS 3	$3.24	$10.53	$2.19	$12.95
BNS 7	$4.23	$10.53	$1.45	$15.32
BNS 8	$5.76	$10.53	$1.35	N/A****

* Meatweight export price for H & G, whole and other form, both chilled and frozen BNS for 2015 calendar year.

** Average price for 2014/15 fishing year.

*** Average price from 2004/05 fishing year to 2014/15 fishing year.

**** Not enough quota trades of BNS8 to determine a valid quota price.

Table 6: Summary of potential decreases to landings revenue in 2016/17

QMA	Option 1		Option 2		Option 3	
	Port Price	Export Price	Port Price	Export Price	Port Price	Export Price
BNS 1	$0	$0	$471,580	$768,690	$1,098,200	$1,790,100
BNS 2	$0	$0	$432,000	$842,400	$1,031,400	$2,011,230
BNS 3	$0	$0	$100,440	$326,430	$252,720	$821,340
BNS 7	$0	$0	$46,530	$115,830	$118,440	$294,840
BNS 8	$0	$0	$28,800	$52,650	$74,880	$136,890
TOTAL	$0	$0	$1,079,350	$2,106,000	$2,575,640	$5,054,400