



# Review of sustainability and other management controls for blue moki 3 (MOK 3)

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Prepared for the Ministry for Primary Industries  
by the Inshore Fisheries Management Team

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## DEADLINE FOR SUBMISSIONS

MPI welcomes written submissions on the proposals contained in the IPP. All written submissions must be received by MPI no later than 5pm on **Wednesday, 25 June 2014**.

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](mailto:FMsubmissions@mpi.govt.nz)

## OFFICIAL INFORMATION ACT 1982

All submissions are subject to the Official Information Act and can be released (along with the 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 under the Act.

# INTRODUCTION

Figure 1: Quota Management Areas (QMAs) for blue moki - MOK 3 is indicated by shading.



1. The Ministry for Primary Industries (MPI) is seeking tangata whenua and stakeholder information and views to inform a review of the catch limits and other management measures for blue moki in MOK 3 (see Figure 1).
2. MPI proposes the following options for the total allowable catch (TAC), total allowable commercial catch (TACC) and associated allowances (see Table 1):

Table 1: Proposed TACs, TACCs and allowances for MOK 3

Option	Allowances				
	TAC (t)	TACC (t)	Customary Māori (t)	Recreational (t)	Other sources of fishing related mortality (t)
Current	-	127	-	-	-
Option 1	146	127	1	5	13
Option 2	187	160	1	10	16

3. Option 1 sets a TAC, TACC and associated allowances (MOK3 is one of the stocks for which a TAC is not currently set). It proposes to set a TAC of 146 tonnes, maintain the current TACC at 127 tonnes and set allowances that reflect current catch levels based on the best available information.

4. Option 2 sets a TAC of 187 tonnes and provides for a moderate increase to the TACC and the recreational allowance. It proposes the customary allowance be set at a nominal level based on available harvest information. For both options an allowance for other sources of fishing related mortality has been proposed at 10% of the TACC. Additional information and stakeholder views are invited to inform the development of final advice on preferred options.

## CONTEXT

### Need to Act

5. Commercial landings of MOK 3 have increased over the last four years (see Figure 2). In the 2012/13 fishing year these landings reached 159 tonnes, exceeding the current TACC by 25%.
6. The available information on MOK 3 is insufficient to enable reliable estimates of  $B_{MSY}$ . Where reliable estimates of  $B_{MSY}$  are not available, section 13(2A) of the Fisheries Act 1996 requires the Minister to use 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, a level that can produce the maximum sustainable yield.
7. Blue moki has been managed within the Quota Management System (QMS) since 1986 and over this time commercial catch has generally fluctuated between 60 and 100 tonnes. The recent increase has occurred despite a set net closure (to protect Hector's dolphins) along the entirety of the MOK 3 coast from 2008. The closure has dramatically reduced access to the fishery for both recreational and commercial set net fishers.
8. There are a range of factors that cause increases in commercial catch levels and they are not necessarily indicative of increased abundance. While there may be an opportunity to provide for a moderate increase in utilisation of the stock over the medium term further information and ongoing monitoring would be required in order to be confident that the any TACC increase was sustainable.

### Management Approach

9. Blue moki stocks are managed under the Draft National Fisheries Plan for Inshore Finfish (the Finfish Plan)<sup>1</sup>. The Finfish Plan is an MPI policy document that came into operation from July 2011. It sets out management objectives for inshore finfish stocks, including MOK 3. Within the Finfish Plan, stocks are grouped, with management approaches and objectives tailored for each group.
10. MOK 3 is in Group 6 in the Finfish Plan. Management objectives for Group 6 stocks are:
  - Enable utilisation of each stock;
  - Ensure catch is at a level that is sustainable;
  - Protect, maintain and enhance habitats of significance to fisheries management; and
  - Minimise adverse effects of fishing on the aquatic environment.

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<sup>1</sup> The Fisheries Plan has not been formally approved under the Act.

11. As fishing pressure on Group 6 stocks is relatively low, the general approach is to minimise management costs by using catch trends as the key monitoring tool for each stock. Declining catch trends or landings in excess of the TACC are used as a trigger for further investigation and consideration of review. MOK 3 falls in the latter category having been over-caught for the past four fishing years.
12. Given the associated uncertainty with using catch as a monitoring tool for stock status, a relatively cautious approach should be taken to adjusting catch limits, particularly for species with biological characteristics that make them vulnerable to fishing, like blue moki. Additional information and/or monitoring could support a less cautious approach, but for low value stocks such as MOK 3, regular research projects or catch sampling is unlikely to be cost-effective. MPI is looking to enhance catch information on MOK 3 to support improved monitoring as well as to promote discussion about options for cost-effective research strategies in conjunction with the larger MOK 1 stock.

### Biological Characteristics of MOK 3

13. The New Zealand blue moki (*Latridopsis ciliaris*) is present around much of New Zealand, but is most common in the south.
14. Blue moki grow rapidly at first, attaining sexual maturity at 40cm fork length (FL) at 5 – 6 years of age. Growth then slows, and fish of 60cm FL are 10 - 20 years old. With a maximum age of around 50 years and late maturity, this means they are vulnerable to over-exploitation when decisions based on low levels of data are made.
15. Many adults take part in an annual migration between Kaikoura and East Cape. The migration begins in late April/May as the fish move northwards. Spawning takes place in August/September in the Mahia Peninsula to East Cape region (the only known spawning ground) with fish then returning to Kaikoura.
16. This regular population interchange between MOK 3 and MOK 1 creates some uncertainty around the nature of the stock structure within these quota management areas. The May 2013 Fisheries Assessment Plenary describes one stock around the North Island and the South Island north of Banks Peninsula. The well defined spawning migration means that there is likely to be interdependence between FMAs and increased catches in FMA 3 are likely to have an impact on other areas.

### Stock Status

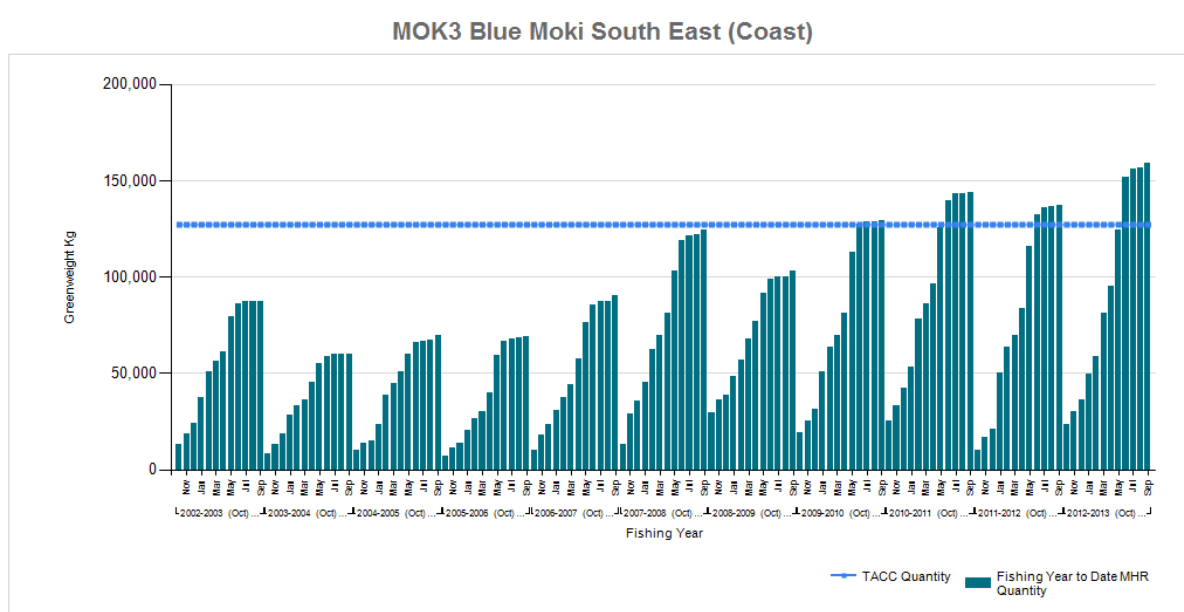
17. Estimates of current and reference biomass are not available for the MOK 3 stock.
18. The 2013 Plenary reported for the MOK 1 and 3 stocks that fishing mortality has probably been low for more than two decades, based on low estimates of fishing mortality in 2005-06 and stable catches over the previous 14 years.

# BLUE MOKI FISHERY

## Commercial

19. Blue moki is currently a low value commercial fishery and is primarily caught within MOK 3 as a bycatch of the inshore set net and trawl fisheries.
20. The fishery has shown an increasing trend in catch since around 2003 leading to the TACC being exceeded for the last four years (see Figure 2).

Figure 2: Reported Catch Landings from Monthly Harvest Returns and TACC (t) for MOK 3 from the fishing years 2002/03 to 2012/13.



21. The most recent estimate of port price for MOK 3 based on the 2012/13 Port Price Survey was \$1.03 per kg. Using this price as a nominal figure for landed value, the estimation of the current annual return from the MOK 3 fishery at full utilisation of the TACC is approximately \$131,000. The quota value for MOK 3 in 2012-13 was \$2238 per tonne giving a total quota asset value of approximately \$284,000.
22. The deemed value rates (per kilo) for MOK 3 are currently set at \$0.78 interim deemed value and \$0.88, ramping to a maximum of \$1.76 for annual deemed value. With a port price of \$1.03, there is only a financial disincentive for landing fish above the available Annual Catch Entitlement (ACE) if the fisher takes more than 120% of their ACE holding.



23. The total MOK 3 deemed value bills for the last five years are shown in Table 2 below.

Table 2: Total annual deemed value bills for the past 5 years (2008-09 to 2012-13) for MOK 3.

Year	Annual Deemed Value Bill
2008-09	\$39.56
2009-10	\$791.24
2010-11	\$4,506.08
2011-12	\$4,443.35
2012-13	\$43,501.53

24. Management controls affecting commercial take of blue moki include a commercial minimum legal size of 40cm, area restrictions for certain fishing methods and a minimum set net mesh size of 114mm for target fishing.

#### **Set netting**

25. Commercial set netting makes up the bulk of blue moki catch in MOK 3. The primary target species in the area are hapuku, blue nose, tarakihi and school shark. While there is some targeted blue moki set net fishing, the majority is caught as a bycatch of these target fisheries.

26. In 2008, as part of the Hector's dolphin threat management plan, a set net ban was implemented which extends along the entire coastline of MOK 3 (see Figure 3(a)). This closure extends 4 nautical miles out to sea for the majority of its extent; however, in the region of Kaikoura it is reduced to follow the contours of the Kaikoura Trench (see Figure 3(b)).

27. The closure has reduced commercial set net access to most of the MOK 3 fishery, however, in Kaikoura, due to the close to shore nature of the trench, the level of access to blue moki habitat is still high. This in combination with the biological migration characteristics of moki makes Kaikoura a significant area for MOK 3 commercial catch.

28. Set netting is also prohibited in the Avon-Heathcote Estuary, in Lyttelton Harbour, Akaroa Harbour and the bays around Banks Peninsula, and in Timaru Harbour.

Figure 3: 2008 Set net closure implemented along the South Island East Coast including all of MOK 3. Includes reduced closure area around Kaikoura.

a)



b)



## Inshore Trawl

29. The inshore trawl fishery in Fisheries Management Area 3 (FMA 3 - the basis of the boundary of MOK3) primarily targets demersal species such as red cod and flat fish. Being a mixed fishery there is inevitable bycatch of cohabiting species such as blue moki.
30. Bycatch of blue moki in the FMA 3 trawl fishery has shown a gradual increase over recent years and in the last fishing year (2012 – 13) trawl caught fish accounted for approximately 15% of the total MOK 3 commercial take.
31. Trawl vessels are subject to the following spatial closures within MOK 3:
  - Pegasus Bay: Trawling is prohibited from all the inshore waters of Pegasus Bay from the Waimakariri River to Godley Head and along the coast to East Head.
  - Salmon Conservation Area: No trawl vessel over 23m or with a power rating of 250 Kw or more may fish within 7 nautical miles of an area of Banks Peninsula commencing at Godley Head and proceeding around to Akaroa Head between 7 December and 14 February each year.
  - Two nautical mile restriction: Trawling is restricted within two nautical miles of the coast from Slope Point south east of Haldane Bay to Clarence Point North of Kaikoura.

- Trawl vessels over 46m: All trawl vessels over 46m are excluded from the Canterbury Bight to a point at sea south east of Banks Peninsula. From that point on the boundary of the closure proceeds 13 nautical miles seaward of the territorial sea to the northern boundary of FMA 3.

## Recreational

32. Popular with recreational fishers, blue moki are taken by rod and reel, set netting and spearfishing. Current recreational management controls in the MOK 3 area include a minimum legal size of 40cm, a daily bag limit of 15 as part of a wider combined finfish limit of 30, area restrictions for certain fishing methods and a minimum set net mesh size of 114mm that must be used in order to take blue moki.
33. The most recent published annual estimate of recreational harvest was obtained from diary surveys in 1999-2000 and indicated that recreational take in MOK 3 would be within a range between 36-70 tonnes.<sup>2</sup> These survey results are however believed to be substantially inflated and no longer reflect the nature of the recreational fishery in MOK 3.
34. Historically the primary recreational target method used to take blue moki was set net. Set net closures introduced in 2008 (outlined in Figures 3(a) and 3(b)) also apply to recreational fishers and have dramatically reduced access to the fishery. This is likely to have significantly decreased the level of recreational take of blue moki in MOK 3. There is still likely to be some catch from spearfishing activity and a small amount of angling.
35. The recent draft 2011-12 New Zealand Recreational Marine Fishing Survey extrapolated an annual recreational take for blue moki in MOK 3 of 388 fish (less than 1 tonne). This survey sampled recreational fishers in a population proportional manner. As a result fisheries in lower population areas (i.e. all of MOK 3 outside of Christchurch) are less well sampled. Within that sample blue moki are a less commonly targeted and caught species compared to more popular fish such as blue cod. These factors combined with other sampling artefacts specific to MOK 3 mean that the harvest estimate obtained from the survey is assumed to be an underestimate.
36. The design for future recreational surveys has since been refined to address the sampling artefacts specific to MOK 3. However, the population distribution and less frequent targeting and catch of blue moki mean that precise harvest estimates could only be obtained from a targeted (and expensive) survey for that species.
37. It is likely that recreational take will increase over time if the abundance of blue moki increases in the area. Increases in the human population and subsequent fishing effort are also likely to contribute to increased recreational take.

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<sup>2</sup> The RTWG recommends that the harvest estimates from the diary surveys should be used only with the following qualifications: a) they may be very inaccurate; b) the 1996 and earlier surveys contain a methodological error; and, c) the 2000 and 2001 harvest estimates are implausibly high for many important fisheries."

38. Further information on the recreational fishery for MOK 3 is invited to inform final advice on this matter.

## **Māori Customary**

39. Māori Customary fishing within the MOK 3 area is administered under the Fisheries (South Island Customary Fishing) Regulations 1999. The area falls within the rohe moana of Te Runanga o Ngai Tahu. Under the regulations customary harvest is authorised by nominated Tangata Kaitiaki/Tiaki and the total catch taken is reported back to MPI.
40. Information from MPI databases on the reported customary take of blue moki within MOK 3 shows very low catch rates (around 20kg in total).
41. It is possible that the majority of blue moki taken for customary purposes is harvested within the recreational limits.
42. Further information on the Māori customary fishery for MOK 3 is invited to inform final advice on the setting of this allowance.

## **Other Sources of Fishing Related Mortality**

43. There is anecdotal information to suggest that volumes of blue moki are returned to the sea during commercial fishing operations. There are a range of factors that contribute to discarding activity.
44. Foremost is the legal requirement for all commercially caught blue moki below a minimum legal size (MLS) of 40cm to be returned to the sea. Despite a lack of verified information on survivorship after release for this species it is expected that the survival rate is likely to be low as the majority of commercial catch is through the methods of set net and bottom trawl.
45. There is also no available information on the catch ratio of legal size fish to fish below the MLS. This is due to the fact that there is no requirement to record fish below the MLS returned to the sea on catch reporting documentation.
46. Blue moki is easily damaged in fishing gear and as a result fish quality can be difficult to maintain particularly when using the fishing methods of set net and bottom trawl. Given that it is already a low value species, damage to fish can easily make it uneconomic for fishers to land blue moki.
47. Given the potentially high levels of unreported mortality within the fishery, MPI considers it necessary to set an allowance for other sources of fishing related mortality. It is suggested that a setting at or above 10% of the TACC would be prudent and in keeping with allowances made for similar fisheries.

## Other Key Considerations

48. When making a decision concerning the TAC for a stock, the Minister for Primary Industries<sup>3</sup> (the Minister) must have regard to the interdependence of stocks, the biological characteristics (discussed above) and any environmental conditions affecting the stock.
49. While MOK 3 landings have exceeded the TACC in the past, and there is a small amount of reported target fishing, this only accounts for approximately 15% of the annual catch. A moderate increase to the TACC is unlikely to translate to a significant increase in fishing effort and associated impacts on other species or the environment.

## PROPOSED RESPONSE

50. See Table 1 for proposed options.
51. There is currently only a TACC in place for MOK 3 with no TAC set or allowances allocated for customary Maori harvest, recreational harvest or other sources of fishing related mortality.
52. Current information indicates that the TACC has regularly been exceeded in recent years. There is no information to suggest that the current catch has resulted in stock decline (evidenced by reduced catch or anecdotal reports from fishers).
53. The proposed options for MOK 3 are to:
  - Set a TAC of 146 tonnes, retaining the current TACC and setting allowances that are estimates of current catch levels based on the best available information (Option 1) or;
  - set a TAC of 187 tonnes, increasing the TACC from 127 tonnes to 160 tonnes and implementing allowances for customary harvest at 1 tonne and recreational harvest at 10 tonnes (Option 2).
54. For both options it is proposed that the allowance for other sources of fishing related mortality is set at or above 10% of the TACC.
55. No index has been determined to monitor changes in abundance. The best information currently available to inform TAC setting for MOK 3 comes from commercial catch levels.
56. Because of the apparent increase in blue moki catch rates as a bycatch of other fisheries, MPI considers both the options proposed are consistent with the objective of maintaining the MOK 3 stock to ensure catch is at a level that is sustainable in the medium term.

### Option 1

57. Option 1 proposes to set a TAC of 146 tonnes. The current TACC of 127 tonnes is retained, which is above the long term average landings since introduction into the QMS. The proposed allowances are set at 1 tonne for customary Maori fishing, 5 tonnes for recreational fishing and 13 tonnes for other sources of fishing related mortality.

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<sup>3</sup> The Minister for Primary Industries now exercises the powers and responsibilities of the Minister of Fisheries under the Fisheries Act 1996.

58. Given that the majority of blue moki is taken as an incidental bycatch and the associated target fishery TACCs ultimately limit the catches, attempts to constrain blue moki catch to average levels could create further disincentives to report and land catch, making it difficult to identify trends or signals that there are opportunities or concerns arising in the fishery.
59. If there was a CPUE index or catch sampling programme in place for the stock, it is likely that changes in relative abundance could be assessed. This would better inform the setting of the TAC and in the absence of this information caution should be taken. There is also some uncertainty as to whether recent increases in commercial catch are reflective of a change in abundance or the effect of changes in fishing practices as result of method restrictions introduced under the Hector's dolphin Threat Management Plan.

## Option 2

60. Option 2 proposes to set a TAC which better provides for existing utilisation in the commercial fisheries.
61. Option 2 proposes:
- the TAC is set at 187 tonnes;
  - the TACC is increased from 127 tonnes to 160 tonnes (an increase of approximately 25%) in line with the current commercial catch level;
  - the allowance for other sources of fishing related mortality is set at or above 16 tonnes ( $\geq 10\%$  of the TACC);
  - a recreational allowance is set at 10 tonnes (to account for uncertainty around current catch estimates, possible increase in abundance and recreational interest in the stock); and
  - a customary Māori allowance is set at 1 tonne (reflective of low levels of reported customary take).
62. A moderate TACC increase from 127 tonnes to 160 tonnes (25%) can provide potential to obtain higher benefits from the stock in the medium term. The TAC is substantially higher than average annual landings, but is still relatively cautious because of the removal of access created by the set net closure implemented in 2008.
63. Option 2 may encourage further development of a target MOK 3 fishery, however, MPI have no information to suggest that this is a high probability or risk. While the sustainability of the MOK 3 stock can continue to be monitored through commercial catch levels, this is not a reliable mechanism for developing fishery potential. The absence of the determination of appropriate biological reference points and an index of abundance for MOK 3 is a limiting factor. Should further development be of interest, MPI considers that options be explored to transition MOK 3 to a higher fishery plan group, and work with stakeholders to develop suitable stock monitoring tools.

64. Under Option 2 the increase allocated to the commercial sector is 33 tonnes. Based on the 2012/13 port price of \$1.03 per kilogram, an additional commercial catch of 33 tonnes is worth \$33 990 per annum.
65. There is very limited information available to characterise the MOK 3 recreational fishery and/or quantify the level of recreational take. The information that has been sourced suggests that recreational catch levels are low compared to the commercial fishery however there is uncertainty around the accuracy of the surveys used. The removal of access due to the 2008 set net closure is likely to have drastically diminished recreational harvest.
66. The proposed 10 tonne allocation takes into account the uncertainty around current recreational catch levels, the apparent increasing blue moki abundance indicated by the commercial catch rates, the relative importance of moki as a recreational species and the potential increase in fishing effort over time. A key issue is recreational access – the ability to fully utilise the recreational allowance given the extent of the current set net bans.
67. Current information on Māori customary take suggests that harvest carried out under customary permit is negligible. It is possible that most blue moki take for customary utilisation is being taken within the recreational limit. The proposed 1 tonne allowance allocated under Option 2 is reflective of this low level of reported customary take.

## Other Management Measures

68. Given the absence of biological reference data the recent increase in commercial catch rate could possibly be due to a short term fluctuation in the population level of the stock.
69. There is a need for the collection and use of better information regarding the extent and level of reporting of MOK 3 being returned to the sea. It would be prudent to link any increase in the TACC to implementation of an appropriate abundance monitoring regime. MPI notes that industry representatives recently rejected the use of a catch sampling programme for MOK 1 and 3 on the basis of cost. A suitable programme would cost in the order of \$250,000. Spreading the cost over a ten year period rather than a one-off cost may make this programme financially feasible. Investigation of a mechanism by which this could occur is suggested. A similar programme was last implemented over ten years ago, however, significant changes in stock abundance may have occurred since then. The value of this monitoring programme is that, as a low knowledge, low value fishery, there are limited means of developing an index of abundance. The most effective approach is for fishing mortality levels to be based on the age structure of the stock. MPI seeks feedback about implementing a sampling programme for MOK 1 and 3.

## INITIAL CONSULTATION

70. Preliminary discussions with recreational representatives about a review of MOK 3 were held at a meeting of the recreational forum for FMA 3 and 5 in April 2014. The representatives suggested that there has been change in relative abundance of the stock. Support was advocated for retention of a species specific bag limit of 15 moki per person per day and there was discussion about the possible reduction of the MLS from 40 to 35cm. This was on the

basis of smaller fish being more accessible, however, this view was not fully endorsed by all the recreational representatives. MPI does not support a reduction of the recreational MLS as blue moki are known to mature at 40cm and setting a MLS below the age of first spawning is inconsistent with the general principles MPI applies when setting size limits. The overriding issue for the recreational group was the limited ability to access the fishery due to the recreational set net ban.

71. The review of MOK 3 has not been formally discussed at Te Waka a Maui Fisheries Forum due to the timings of these planning meetings. A discussion has taken place with customary representatives of Ngai Tahu which signaled that the review would be considered and further information would be received through the official submission period.
72. MPI has discussed the review of MOK 3 with the Southern Inshore Fisheries Management Company (SIFMC) as part of the annual fish planning process. SIFMC supported the review of MOK 3 based on an assessment of commercial catches and promoted MOK 3 as a candidate for review.

## CONCLUSIONS

73. Since introduction into the QMS commercial landings of MOK 3 have fluctuated, however, the TACC has been consistently exceeded over the last four years. This has triggered the review of the management of the MOK 3 fishery.
74. Option 1 proposes setting a TAC, retaining the current TACC and setting allowances that reflect the best available information on current catch levels from recreational and Māori customary harvest.
75. Option 2 proposes to enable improved utilisation of the blue moki stock in FMA 3 by setting a moderately higher TAC, increasing the TACC to reflect current catch levels, setting a recreational allowance that provides for increased utilisation, and setting an allowance for Māori customary fishing at 1 tonne.
76. Under both options an allowance for other sources of fishing related mortality is proposed at or above 10% of the TACC.
77. The TAC and TACC increase proposed in Option 2 is moderate in volume given the size of the QMA. Because Option 2 is only allowing an increase that reflects what is already being caught, the changes are a reflection of current practice rather than encouraging further increases in MOK 3 catch. The proposal to increase the TACC is not anticipated to undermine the sustainability of the stock or the interests of customary and/or recreational fishers. It is however the view of MPI, that it would be prudent to link any increase in the TACC to the implementation of an appropriate abundance monitoring regime to ensure that responsive management decisions can be made if catch levels were observed to fall away in the future.