

PROPOSED EXTENSION TO THE TEMPORARY BLUE COD AMATEUR FISHERY CLOSURES IN MILFORD & DOUBTFUL SOUNDS

Executive Summary

- 1 The Fiordland Marine Guardians (the Guardians) propose that the existing two year closures to amateur blue cod (*Parapercis colias*) fishing in Milford and Doubtful Sounds be extended for a further two years. The current closures are due to end on 29 June 2007.
- 2 The Guardians, as the Guardians of Fiordland's Fisheries & Marine Environment Inc., originally proposed the existing closures. They were concerned about localised depletion due to pressure from fishing. The Guardians' members come from various groups including commercial and recreational fishers, tangata whenua, charter boat operators, scientists and environmentalists.
- 3 Blue cod stocks in the closed areas have been monitored during the existing closures, but no baseline data are available for either area prior to the closures. The Guardians consider the extension necessary both to provide a better opportunity to monitor the impact of the closures and to allow more time for stock recovery to take place.
- 4 MFish's initial position is to support the proposed closure for a further two years from 30 June 2007 to 29 June 2009.

Summary of Options

- 5 This paper considers the following management options:

Option 1: Continuation of the current closures to recreational fishing for a further period of two years (status quo), or such other period as may be considered appropriate, to enable a better understanding of the blue cod stocks in Milford and Doubtful Sounds and to assist with the objective of stock recovery. Ideally, this would also involve a continuation of the current voluntary rāhui on customary fishing authorisations.

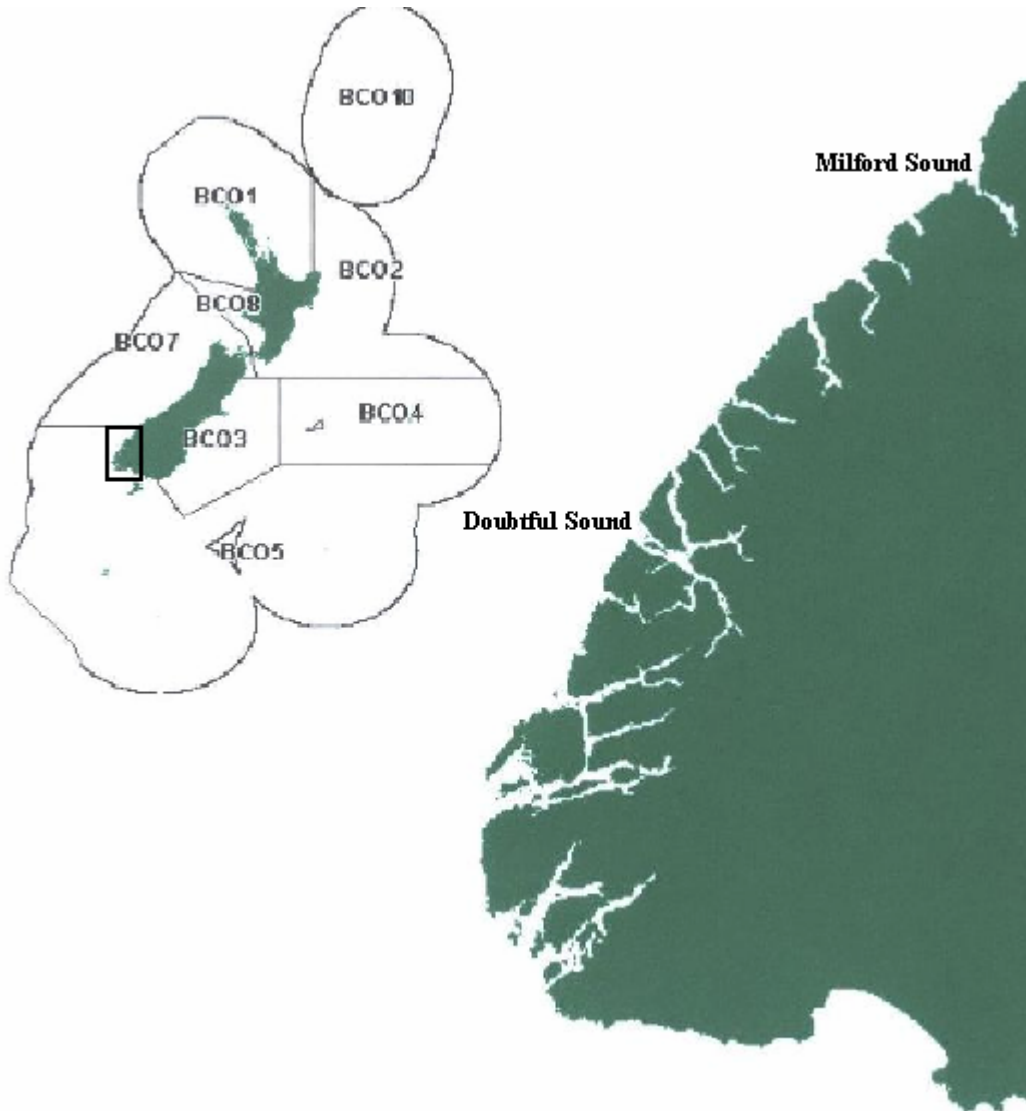
Option 2: Reopen the Milford and Doubtful Sound fisheries under the same management regime that is in place for recreational fishing in the remainder of the Fiordland Marine Area. That is: bag limit of 3 per day in the internal waters¹, minimum length of 33 cm², with no accumulation permitted³. Customary fishing would be at the discretion of Kiatiaki/Tangata Tiaki. Commercial fishing would remain closed just as for the remainder of the internal waters of Fiordland under

¹ Regulation 4AA(1) Fisheries (Southland and Sub-Antarctic Areas Amateur Fishing) Regulations 1991

² Regulation 6(2) Fisheries (Amateur Fishing) Regulations 1986

³ Regulation 7(4) Fisheries (Southland and Sub-Antarctic Areas Amateur Fishing) Regulations 1991

regulation 3(1)(c) Fisheries (Southland and Sub-Antarctic Areas Commercial Areas Commercial Fishing) Regulations 1986.



Rationale for Management Options

- 6 In 2003, after several years work including public consultation, the then Guardians of Fiordland's Fisheries & Marine Environment published the "Fiordland Marine Conservation Strategy" (the Strategy). The Strategy was an integrated approach to managing the marine area of Fiordland. Subsequently, the group was given a statutory role as the Guardians of Fiordland with the enactment of the Fiordland (Te Moana o Atawhenua) Marine Management Act 2005.
- 7 The same Act established the Fiordland (Te Moana o Atawhenua) Marine Area (the Fiordland MA). The Fiordland MA extends from approximately Sandhill Point in the South to Awarua Point on the West Coast, includes all of the fiords, and extends 12 nautical miles out to sea. The Act also created eight new marine reserves. At the instigation of the New Zealand Federation of Commercial Fishermen, the northern

side of Milford Sound (Piopiotahi) and part of Doubtful Sound (Te Awaatu Channel - The Gut) have been marine reserves since 1993.

- 8 In the Strategy, the Guardians proposed a management package to address a variety of issues, including concerns for the blue cod stocks in Milford and Doubtful Sounds. The Guardians believed the stocks were depleted as a result of pressure from fishing, exacerbated by the relative ease of access for fishers. Both Milford and Doubtful Sounds are accessible by road and are consequently thought to be particularly vulnerable to localised depletion.
- 9 The Guardians recommended that commercial fishing, already excluded from Milford Sound since 1954, be excluded from Doubtful Sound too. They proposed a combination of other measures, including temporary closures and a “fish for a feed, no accumulation” approach to recreational fishing to address perceived stock depletions throughout the inner waters of Fiordland.
- 10 In regard to blue cod, the Guardians advocated Milford and Doubtful Sounds be closed to recreational fishing to allow time for the stocks to recover. Consequently, the existing two year closures were put in place in 2005 as part of a management package of legislative and non-legislative measures which were applied to the Fiordland MA. The existing closures were brought about by an amendment to the Fisheries (Southland and Sub-Antarctic Areas Amateur Fishing) Regulations 1991. In the Strategy, the Guardians had also envisioned at least one further closure of perhaps two years may be necessary.
- 11 The Guardians work with management agencies, providing advice and making recommendations to them. The management agencies in the Fiordland MA are the Department of Conservation, Environment Southland, the Ministry for the Environment, the Ministry of Agriculture and Forestry, and the Ministry of Fisheries.
- 12 The Guardians and the management agencies developed a monitoring programme in regard to the management package. A summary of the monitoring programme was produced which included goals, outcomes and monitoring objectives. The stated goal in regard to the temporary closures was:

To restore the blue cod fishery/stocks to allow reopening of the fishery in the future.

And, the stated outcome was:

Populations of blue cod in Milford and Doubtful sounds are maintained or improved.

The monitoring objectives were:

To provide baseline data on blue cod population to provide data relevant to blue cod closure; and

To assess the impact of management decisions (closure and reduced bag limit) on the blue cod fishery in Milford and Doubtful Sounds.

- 13 The existing closures are due to end on 29 June 2007, and the Guardians are recommending a continuation of the closures for a further two years. They feel that there has been insufficient time for enough data to be collected to meet the monitoring objectives, particularly since no data are available for the stocks prior to the closures. Based on known characteristics, such as age at maturity and the sedentary nature of blue cod, MFish considers that there is unlikely to have been sufficient time for the stocks to recover to allow reopening of the fisheries.
- 14 MFish has arranged to have monitoring undertaken by experimental fishing in the closed areas. The first study was conducted in summer 2005/2006 (Project SAP2005-08), during January and March 2006 in both Milford and Doubtful Sounds. The contractor, Alan Key, is undertaking further monitoring over the summers of 2006/2007 and 2007/2008. The most recent monitoring, in November 2006 (Project SAP2006-04), included experimental fishing in the marine reserve in Milford Sound (Piopiotahi) for comparison with the recently closed area.
- 15 The first project looked primarily at relative abundance using catch per unit effort (CPUE) as a measure and experimental line fishing as a method. There are currently no data with which to compare the initial results as baseline studies were not carried out prior to the closures. Preliminary results from the November 2006 monitoring survey appear to show some improvement in relative abundance compared with the first study. However, it is not yet possible to draw conclusions about the impact to date of the closures on blue cod stocks.
- 16 The initial project also included tagging to examine movement of blue cod. The early results suggest little movement of blue cod may be occurring. However, the Final Research Report for the project remarked that, based on size frequency data, the fish within the inner sounds may not represent self-sustaining populations: fish in the population originated from outside the inner sounds. The Report suggested that additional data would be needed to assess this theory. However, it is consistent with the suggestion from a recent study of Dusky Sound that inner fiord blue cod stocks appear to be derived from the adjacent open coast⁴. It is not known if blue cod stocks are breeding within Milford and Doubtful Sounds. If they are not, increases in stock numbers will be reliant to recruitment from the outer sounds and adjacent coast. Under those circumstances, continuing the closures may not be justified as a means to improve relative abundance of blue cod.
- 17 Milford and Doubtful Sounds fall within BCO 5. The BCO 5 fishery has a total allowable commercial catch (TACC) of 1548.471 tonnes for 2006/2007. Although BCO 5 covers an extensive area, most of the commercial catch is taken within Foveaux Strait and around Stewart Island. There are no estimates of recreational and customary take specifically for the closed areas. However, it is likely that recreational harvest within BCO 5 as a whole is low in comparison to commercial harvest.
- 18 Commercial fishing is not permitted within the internal waters of Fiordland and, due to a voluntary rāhui, there are no customary permits being issued at present. Therefore, the closures' only impact is on recreational fishing. This paper assumes that the rāhui will continue.

⁴ Carbines, G.; McKenzie, J. (2004) Movement patterns and stock mixing of blue cod in Dusky Sound in 2002. *New Zealand Fisheries Assessment Report 2004/36*. 28p.

- 19 Based on their own knowledge, combined with background information gathered for the purposes of developing the Strategy, the Guardians believe that there has been significant depletion of the blue cod fisheries within both Milford and Doubtful Sounds. This belief is consistent with the findings of studies conducted in other areas of New Zealand which have shown a trend of local depletion occurring in more accessible areas, for example in the inner Marlborough Sounds⁵ and Banks Peninsula⁶.
- 20 Fishing pressure may not be the only cause of variation in blue cod stocks, and abundance of blue cod may fluctuate naturally. Therefore, apparent depletion might be caused by factors other than fishing pressure, such as changes in food and habitat availability. However, increases in abundance and size of blue cod have been demonstrated when harvesting has been excluded from an area⁷.

Assessment of Management Options

Option 1 – Continuation of the existing closures (status quo)

- 21 Under this option, there will be an opportunity to gather more information about the impact of the closures, including the impact of managing blue cod fisheries on smaller geographic scales than they have traditionally been managed. There will also be an opportunity to look at other issues such as movement and recruitment of blue cod within and into the closed areas, in the absence of fishing. This option is consistent with the initial aim of the closures, which was to restore the blue cod stocks to allow reopening of the fishery in the future. It will also facilitate further research, the need for which has been identified by the current and previous monitoring projects.
- 22 The longer the closures continue, the more opportunity there will be for both stock recovery and research into the impact of the closures. The main advantage of a two year extension over a longer extension is that it would ensure that the situation is closely examined prior to the end of that time to assess whether a continuation of the closures is then useful or necessary.
- 23 A longer closure would be possible, but it is not clear that it is desirable without further data on the success or otherwise of the existing closures, and is not being advocated by the Guardians at this time. However, given age and size at maturity, a longer closure may be sensible to enable time for more blue cod to reach breeding size and for movement of more blue cod into the inner fiords to occur. Monitoring is already planned for 2007/2008, and this could be extended to cover further periods, regardless of the length of any continuation of the closures.
- 24 Recreational fishing in the other parts of the Fiordland MA is constrained by relatively difficult access. Therefore, as Milford and Doubtful Sounds are two of the

⁵ Blackwell, R G (2002). Abundance, size and age composition of recruited blue cod in the Marlborough Sounds, September 2001. Final Research Report for Ministry of Fisheries, Project BCO2001/01 (Unpublished).

⁶ Carbines, G. D.; Beentjes, M. P. (2006) Abundance of blue cod off north Canterbury in 2004-05. *New Zealand Fisheries Assessment Report 2006/30*. 26p.

⁷ Davidson, R. J. (2001) Changes in population parameters and behaviour of blue cod (*Parapercis colias*, Pinguipedidae) in Long Island – Kokomohua Marine Reserve, Marlborough Sounds, New Zealand

more accessible areas, continuation of the closures is likely to have a significant impact on recreational fishing.

Option 2 – Reopen Milford and Doubtful Sounds to recreational fishing for blue cod

- 25 There is currently no strong evidence that the closures have had any impact on blue cod stocks⁸. Also, the evidence that the stocks were depleted by fishing prior to the closures was largely anecdotal, although the likelihood of depletion is suggested by the results of studies from other areas of the South Island^{9, 10}. However, the closures have been monitored for only two years and it is not possible to assess whether the current closures have yet achieved the objectives. If the fishery was depleted and is reopened too soon, the danger is that the current closure would not have provided for a rebuild and will not have redressed the localised depletion.
- 26 Were the fishery to be reopened, monitoring could be carried out and compared with the data collected during the existing closures, to assess the impact of renewed fishing in the currently closed areas. This option may be appropriate if the closures have had no impact or the blue cod fisheries have recovered sufficiently to withstand the pressure of renewed recreational fishing, albeit under a revised management regime.
- 27 The Guardians were concerned about localised depletion caused under the previous management regime. New measures mean that all of the inner waters of Fiordland are now subject to a reduced daily bag limit¹¹, with no accumulation permitted. This may be sufficient to address the particular requirements of Milford and Doubtful Sounds. However, extending the closures will provide more information on which to base any future management decisions, and ultimately promote sustainable utilisation.

Statutory and Regulatory Considerations

- 28 In forming the management options, the following statutory considerations have been taken into account.
- a) **Section 13 of the Fiordland (Te Moana o Atawhenua) Marine Management Act 2005:** The Fiordland Marine Guardians (the Guardians) have a statutory role which includes facilitating and promoting the integrated management of the Fiordland MA. Their functions also include advising and making recommendations to the management agencies, including MFish.
 - b) **Section 26 of the Fiordland (Te Moana o Atawhenua) Marine Management Act 2005:** Management agencies exercising powers or carrying out functions in the Fiordland MA must take into account any advice or recommendations provided by the Guardians. Therefore, in deciding whether to extend the closures, MFish is required to take into account the fact that the Guardians are recommending a two year extension to the existing closures.

⁸ Data from the most recent experimental fishing will be available later this year after it has been reviewed by MFish.

⁹ Carbines, G. D.; Beentjes, M. P. (2006) Abundance of blue cod off north Canterbury in 2004-05. *New Zealand Fisheries Assessment Report 2006/30*. 26p.

¹⁰ Carbines, G. D.; Beentjes M. P. (2006) Relative abundance of blue cod off North Otago in 2005. *New Zealand Fisheries Assessment Report 2006/09*. 20p.

¹¹ Down from 30 at one time to 3 currently.

- c) **Regulation 3 of the Fisheries (Southland and Sub-Antarctic Areas Commercial Fishing) Regulations 1986:** This prohibits commercial fishing in Milford Sound and the internal waters of Fiordland. Although this was introduced at the same time as the amateur closures, it is independent of them. No change will be needed in this regard whether or not the amateur blue cod fishery remains closed.
- d) **Regulation 3A of the Fisheries (Southland and Sub-Antarctic Areas Amateur Fishing) Regulations 1991:** This established the existing two year closures to amateur fishers of the blue cod fishery in Milford and Doubtful Sounds. The closures began on 30 June 2005 and will expire under this regulation on 29 June 2007. The closures could be extended by amending this regulation under s 297 of the Fisheries Act 1996 (the Act). An alternative would be to implement a continuance of the closures as a sustainability measure under s 11 of the Act which can be done either by regulation made under s 298 of the Act or by notice in the *Gazette*.
- e) **Section 10 of the Act:** The proposal is based on the recommendation of the Guardians. Members of the Guardians are experts on the Fiordland marine environment, and have significant knowledge of blue cod fisheries in Milford and Doubtful Sounds. The advice of the Guardians is considered by MFish to be the best available information for Milford and Doubtful Sounds. No comprehensive studies have been undertaken in this area by any other groups or individuals, and the data from the ongoing monitoring is insufficient at present to reach any conclusions about the impact of the closures. Information is available for blue cod populations in other areas of the South Island. That information is consistent with the theory of localised depletion being caused by fishing pressure. It also supports closing areas to fishing as promoting increase in relative abundance and size of blue cod stocks.
- f) **Section 11:** Before setting or varying any sustainability measure for the blue cod stocks, the Minister of Fisheries must take into account any effects of fishing on the stock and the aquatic environment¹², any existing controls that apply to the stock or area concerned¹³, and the natural variability of the stock concerned¹⁴. No existing controls under the Act for blue cod will be affected by the continuation of the closures. The Minister may close an area to the taking of any species to assist in replenishing fisheries resources that have become depleted. A closure can last for any specified period of time. It is proposed that the existing closures be extended for a further two years. The closures may need to be extended for a further period, depending on the recovery of the blue cod stocks and the outcome of the research.
- g) **Section 11(2A)(b):** There are no approved Fisheries Plans for BCO 5.
- h) Other statutory considerations are set out in the appendix.

¹² Section 11(1)(a)

¹³ Section 11(1)(b)

¹⁴ Section 11(1)(c)

Initial Position

- 29 MFish's initial position is to support the Guardians' proposal that the closures continue for a further two years from 30 June 2007 to 29 June 2009.

Appendix

Biology

- 29 Blue cod (*Parapercis colias*) is a bottom-dwelling species endemic to New Zealand. They are not a true cod but a member of the sandperch family (Pinguipedidae). Blue cod are distributed throughout New Zealand, and are most commonly found near foul (rocky) ground to a depth of 150m, although there have been some reported catches from as deep as 360m. They are highly prized by commercial and non-commercial fishers, and are generally the most important recreational finfish in Southland.
- 30 Blue cod growth rates have been shown to vary considerably and may be influenced by a number of factors, including sex, habitat quality and fishing pressure. Size at sexual maturity also varies according to location. Data for Southland suggests an age at maturity of 4-5 years, which is at 26-28 cm total length¹⁵. In Southland male blue cod take 7 years and females around 9 years to reach minimum legal size (33cm)¹⁶. The maximum age of blue cod is thought to be around 18 years¹⁷.
- 31 Blue cod are believed to be diandric protogynous hermaphrodites¹⁸. This means that they may change sex from female to male (secondary males), but that some individuals begin life as males (primary males). The largest animals in blue cod populations tend to be male. Based on studies of related species it is thought likely that sex change is regulated by the presence or absence of larger males in a population. It is also thought that fishing may impact on population structure by removing large males and some studies have shown a shift from the expected sex ratio in areas subject to heavier fishing pressure^{19,20}.
- 32 Blue cod have an annual reproductive cycle. A study conducted in Dusky Sound²¹ suggests that blue cod populations in Fiordland have a similar spawning season to other areas of Southland where spawning occurs from spring to summer²². Eggs are pelagic for about five days after spawning, and the larvae are pelagic for about five

¹⁵ Carbines, G D (2003) Age, growth, movement and reproductive biology of blue cod (*Papapercis colias* – Pinguipedidae): Implications for fisheries management in the South Island of New Zealand. PhD Thesis, University of Otago, unpublished. 225 p.

¹⁶ Carbines, *ibid*.

¹⁷ Carbines, *ibid*.

¹⁸ Carbines, *ibid*.

¹⁹ Carbines, G. D.; Beentjes M. P. (2006) Relative abundance of blue cod off North Otago in 2005. *New Zealand Fisheries Assessment Report 2006/09*. 20p.

²⁰ Beentjes, M. P.; Carbines, G. D. (2005) Population structure and relative abundance of blue cod (*Parapercis colias*) off Banks Peninsula and in Dusky Sound, New Zealand. *New Zealand Journal of Marine and freshwater Research* 39:77-90.

²¹ Carbines, G and McKenzie J 2004. Movement patterns and stock mixing of blue cod in Dusky Sound in 2002. *New Zealand Fisheries Assessment Report 2003/37*. 35p.

²² Carbines, G. (2003) Age, growth, movement and reproductive biology of blue cod (*Papapercis colias* – Pinguipedidae): Implications for fisheries management in the South Island of New Zealand. PhD Thesis, University of Otago, unpublished. 225 p.

more days before settling to the seabed. Juveniles then migrate from shelf waters to shallow areas inshore. Juveniles are not caught by commercial potting or lining, and therefore blue cod are not vulnerable to the main commercial fishing methods until they are sexually mature. Recreational methods do catch juveniles but the survival of these fish is good if they are caught using large hooks (6/0) and returned to the sea quickly.

- 33 Blue cod are relatively sedentary, and most tagged fish are found to have travelled less than 1km (although some have been recorded travelling up to 156km²³). The Dusky Sound study found a similar pattern where most individuals are moving only relatively short distances. The study also concluded that blue cod stocks in the inner fiords appear to originate from the outer areas and that blue cod populations in the inner fiords are 100% resident. Because of their sedentary nature, it has been suggested that management of blue cod on smaller geographical scales to avoid localised depletion may be appropriate^{24, 25}.

Statutory Considerations

- 34 **Section 5(a) of the Fisheries Act 1996:** A wide range of international obligations relate to fishing (including sustainability and utilisation of fish stocks and maintaining biodiversity). MFish considers issues arising under international obligations are adequately addressed in the management options for these stocks.
- 35 **Section 5(b):** MFish considers issues arising under the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 are adequately addressed in the management options for these stocks. It is noted that there is a member of the Tangata Whenua on the Guardians.
- 36 **Section 8:** The purpose of the Fisheries Act 1996 describes the overriding objective of fisheries management: providing for the utilisation of fisheries resources while ensuring sustainability. Management of blue cod stock must be consistent with this requirement. Providing for utilisation while ensuring sustainability may be achieved in different ways and the objective may be reached over time. Utilisation of blue cod fisheries resources in closed areas would be restricted for the extended period of the closures. However, the closed areas are small in relation to total area of BCO 5 and the Fiordland MA. The benefits of obtaining a better understanding of the impacts of fishing on stocks and allowing time for recovery to occur outweigh any lost utilisation of the fishery in the short term.
- 37 **Section 9(a), (b), and (c):** This section provides three environmental principles that must be taken into account when exercising powers in relation to utilisation of fisheries resources and ensuring sustainability. First, associated or dependent species should be maintained above a level that ensures their long term viability. Second, biological diversity of the aquatic environment should be maintained. Third, habitat of particular significance for fisheries management should be protected. As the closures are only in regard to blue cod, fishing pressure on other species may increase

²³ Carbines, G D 2001. Movement patterns and stock mixing of blue cod in Southland. Final report to the Ministry of Fisheries for Project SOBC04. 77p.

²⁴ Carbines (2003) *ibid*.

²⁵ Warren, E.; Grindley, R.; Carbines, G.; Teirney, L. (1997) Characterisation of the Southland Blue Cod Fishery. Report held by Ministry of Fisheries, Dunedin, New Zealand. 38 p.

while these areas remain closed, and pressure on blue cod stocks in neighbouring areas may also increase. If blue cod stocks increase within Milford and Doubtful Sounds this may also impact the abundance of their prey species.

- 38 **Section 11(2A) (a and c):** MFish is not aware of any provisions applicable to the coastal marine area known to exist in any policy statement or plan under the Resource Management Act 1991, or any management strategy or plan under the Conservation Act 1987, which are relevant to the continuation of blue cod closures.
- 39 **Section 13:** The total allowable catch of BCO 5 will not be affected by these proposals.
- 40 **Section 21(1)(a and b) and (4)(I and ii) and (5) statement:** As the TACC, customary and recreational allowances are not altered; there are no implications for section 21 from this proposal.