GREY MULLET (GMU1) – FINAL ADVICE

Initial Proposal

1 The Ministry of Fisheries (MFish) proposed in its Initial Position Paper of 30 June 2005 the following management measures for the GMU 1 stock for the start of the 2005–06 fishing year:

Table 1: Management proposals for GMU 1 stock as identified in Initial Position Paper

Option	Approach to setting recreational allowance & TACC	Proposed TAC (tonnes)	Customary allowance (tonnes)	Recreational allowance (tonnes)	Other sources of fishing-related mortality (tonnes)	Proposed TACC (tonnes)
1a	Proportional	1101	100	90	33	878
1b	Non-proportional	1101	100	100	33	868
1c	Non-proportional	1101	150	150	33	768
2a	Proportional	1043	100	80	31	832
2b	Non-proportional	1043	100	100	31	812
2c	Non-proportional	1043	150	150	31	712
3a	Proportional	985	100	70	30	785
3b	Non-proportional	985	100	100	30	755
3c	Non-proportional	985	150	150	30	655

Submissions

2 Submissions on the management proposals for GMU 1 were received from:

- **Kaipara Harbour Sustainable Fisheries Management Study Group** (the Kaipara study group)
- **Muriwai Sports Fishing Club Inc**.
- **New Zealand Recreational Fishing Council** (NZRFC)
- **New Zealand Seafood Industry Council Ltd** (SeaFIC)
- **Northern Inshore Fisheries Management Company** (Northern Inshore)
- **option4**
- **Royal Forest and Bird Protection Society and Environment and Conservation Organisations of New Zealand** (Forest & Bird and ECO)
- **Te Runanga A Iwi O Ngapuhi** (TRAION)
- **Peter Yardley**

- **Sanford Limited** (Sanford)
- **Te Ohu Kai Moana Trustee Limited** (Te Ohu)
- **Aotearoa Fisheries Limited** (AFL)

Rationale for Management Options

Submissions

Problem definition

3 **NZRFC** observes that the TACC has never constrained commercial catch and it has always been fished intensively. This intensive fishing effort has caused serious conflict between itinerant commercial fishers and all locals, both commercial and non-commercial. NZRFC is concerned that commercial fishers have the ability to deplete an area and move on to the next, thus never giving the local fisher the chance to enjoy an improved fishery.

4 **TRAION** fully supports the need and requirement to manage fisheries resources sustainably.[1]

5 **SeaFIC, Northern Inshore, Sanford, AFL,** and **Te Ohu** see no issues for which sustainability measures (specifically TAC and TACC reductions) are required in GMU 1. SeaFIC and Northern Inshore consider that MFish is using sustainability measures to try to address use issues. These groups allege anecdotal and local concerns about sustainability and, especially, utilisation have triggered the review of catch limits for GMU 1. Northern Inshore are concerned about the review becoming politicised. Northern Inshore also notes the IPP does not consider if the reports of localized depletion are correct. Further, the company suggests the Minister has not been provided with alternative options or tools to manage perceived local depletion options.

6 SeaFIC, Northern Inshore, and Sanford also argue the IPP did not provide any analysis about how a TAC reduction will address local access or depletion issues. The use of TAC reductions as "a *de facto* management tool to manage local access issues, when alternative management tools are available" is not considered justifiable.[2]

7 SeaFIC and Northern Inshore suggest the IPP failed to provide you with impartial and comprehensive advice because it did not include the *status quo* as a valid management choice, even where information supporting a sustainability concern is not compelling.

8 **Northern Inshore** recommends that MFish defer any TAC and TACC review until an updated commercial CPUE analysis is available. Such analysis should incorporate the 2005-06 fishing year, and account for changes in reporting requirements, methods,

[1] TRAION advise that the tribal lands, shores and waters of Ngapuhi includes the waters from the Bay of Islands through to Whangarei, and from the Hokianga down the west coast towards Dargaville.
[2] Seafood Industry Council submission on review of sustainability measures and other management controls for the 2005-06 fishing year – initial position paper of 30 June 2005. 8 August 2005. Page 11.

and spatial closures. Northern Inshore also asks that MFish gets better information on non-commercial catch before a review of sustainability measures is undertaken.

9 **Sanford** is concerned that MFish has reacted to anecdotal evidence of localised depletion. The information presented in the IPP leads readers to believe that these concerns are being observed over much of the stock. Sanford suggests that this is misleading, as little anecdotal information is being presented about the wider stock.

10 **Te Ohu** believes the problems for the 'Kaipara Harbour stocks' need to be re-scoped, such that the broad range of issues and measures that could be taken using an objectives-based management approach can be re-explored. Further, Te Ohu suggests that these shared fisheries might be progressed more productively as important case studies through objectives-based management plans.

Stock status

General perceptions

11 **NZRFC** consider that the GMU 1 stock is seriously depleted, thus denying recreational fishers full access to this important stock.

12 **option4** notes excessive TACCs since the fishery's introduction into the QMS have depleted the grey mullet stock. option4 considers the combination of excess quota and the size of the QMA have led to the development of a mobile fleet of set netters capable of depleting entire harbours and maintaining low stock levels in those harbours.

13 The **Kaipara study group** has reviewed all the scientific information available to it. The group concludes the grey mullet fishery is depleted in the Kaipara Harbour. The Kaipara study group considers the IPP does not similarly conclude that these 'fisheries' are depleted. The Kaipara study group grants the IPP identifies that some areas such as the Kaipara are depleted.

14 The **Muriwai Sports Fishing Club Inc.** considers the GMU 1 stock is subject to much localised depletion. The huge and varied coastline of GMU 1 makes effective management under present regimes impossible. The club notes lack of constraint on commercial catch has adversely affected recreational access.

15 **Forest & Bird and ECO** welcomes the review of catch limits in the GMU 1 stock. Forest & Bird and ECO notes that catch limits were cut in 1998 but this was not enough and that catches are under 20% of the TAC.

16 **Peter Yardley** has commercially fished the Kaipara Harbour since 1975. Mr Yardley remarks that grey mullet are 'hunted constantly by roving fishers, day and night, covering huge areas of the harbour'. Mr Yardley has noticed a decline in fish size and seasonal patterns because of this 'constant harassment, and escape to deeper water is not available'. Historical catch rates are now upheld with the use of high-powered vessels that search out the mullet schools. Mr Yardley advises the changes in technology used in the fishery have not been matched with management actions to ensure the fishery and harbour is kept in a healthy state.

17 **Northern Inshore** believes the current performance of the fishery suggests there is no sustainability risk to the stock. Commercial catches have increased in recent years. The period of lower catches and, in some areas, a declining trend in CPUE, suggest below average recruitment may now be improving.

18 Northern Inshore suggests the GMU 1 stock is a complex fishstock that is likely to consist of component sub-stocks. The company states that micro-managing these sub-stocks is costly and difficult. There is some evidence that commercial fishing effort has shifted in response to variations in CPUE and, to some extent, this shows the fishery is self-regulating. The company believes that updating the CPUE analyses at the end of this current fishing year would likely confirm the positive anecdotal evidence on the current performance of the stock.

Use and interpretation of catch per unit effort index

19 **Northern Inshore** has a significant concern about use of the catch data in the Watson et al. 2005 report. The company compared two years of catch information contained in the Watson report with information it got from MFish during the consultation period. The company advises there are discrepancies in commercial catch taken from various sub-areas.

20 Northern Inshore believes there is an error of fact in the IPP. Watson et al. (2005) show that, for the latter part of the analysis period (1998-99 to 2001-02), the three main harvest areas for GMU 1 were East Northland, Lower Waikato and the Kaipara Harbour. The east coast accounted for approximately 40% of the catch, not 25% as the IPP stated.

21 The company believes that these differences mean it is not clear what weight should be given to relevant CPUE trends to evaluate sustainability concerns. Further, the company believes that these discrepancies need to be addressed through a working group before the CPUE analysis can be used for decision-making purposes.

22 Having reviewed the standardised CPUE trends for the various sub-areas for the GMU 1 stock, the company remarks that the index shows no trend in abundance for East Northland or the Lower Waikato. The company submits the CPUE index for the Kaipara shows a downward trend, but this may not necessarily reflect a change in abundance for the harbour. Of the other less important areas, two show no trend and the third shows a possible decline.

23 Further, the company believes MFish is misrepresenting the scale and magnitude of decline of CPUE as an index of abundance in the 'west coast stocks'. The company submits the trends in relative abundance are not constant in the respective sub-areas and that fishing patterns are shifting through time. Northern Inshore advises that when the CPUE indices were originally presented to the Inshore Stock Assessment Working Group, no overall sustainability concern was identified. The stock was not referred to the Plenary for consideration. The company advises CPUE declines were found in the Kaipara Harbour, the Manukau Harbour and the Hauraki Gulf. The remaining statistical areas showed no trend.

24 Watson et al. (2005) conclude the differences in CPUE trends between sub-areas were enough that the sub-areas should be considered independently. The company also states fishing effort is not constant across years. Fishing effort has moved away from

areas such as the Kaipara into more plentiful areas such as the Lower Waikato and East Northland. Northern Inshore suggests these shifting patterns of effort should ease some of the sustainability concerns.

25 Northern Inshore observes the suggestion of MFish that changes in CPUE are the result of a drop in biomass. This is one interpretation, but the company considers it is not the only possible interpretation. The company refers to the 2005 plenary document which discusses changes in gillnet mesh size that could have had a significant effect on the CPUE indices. Another possible contributor could be the shift from set net to ring net fishing documented in Beentjes (2005) and Hartill (2002).

26 A further possibility could be deterioration in the environmental health of the west coast harbours. In support of this possibility, the company notes that both the FLA 1 and SPO 1 IPPs have identified concerns with the health of the Manukau harbour that are unrelated to fishing pressure.

27 Northern Inshore submits changes in the main fishing method for grey mullet may have affected the CPUE index for the Kaipara sub-area. The company notes a sudden drop in the Kaipara Harbour CPUE series in 1998, when MFish introduced a new form to separate the more efficient ring net from set net catch records. The company believes that previously ring netting had been recorded under the set net form.

28 The company considers the shift in effort may affect CPUE indices in a few ways. These need to be examined before concluding that these indices represent changes in the abundance of the target species. The company provides two examples to illustrate this potential indirect effect on the CPUE index for the Kaipara Harbour, as follows:

- The spatial distribution of set netting may have changed. If set nets are only used in areas where ring nets are not effective and, if these areas have, on average, lower catch rates than the ring net areas, then the set net CPUE indices will show a drop relative to previous years;

- If the shift to ring net fishing involves mainly fishers who previously were the most successful set net fishers, then the set net indices for the remaining fishers would be expected to drop.

29 Northern Inshore also suggests spatial closures and agreements have shifted commercial fishing away from productive areas in the Kaipara since 1999. Northern Inshore believes more consideration needs to be given to other reasons that may affect catching success in the Kaipara, and how these effects can be incorporated into a standardised CPUE analysis. This suggestion was included in Northern Inshore's previous submission on proposed measures for the Kaipara Harbour and was copied to MFish at the time.

Recent trends in commercial catch

30 Northern Inshore advises that recent catch data from the fishery clearly shows that fishery performance is improving. Catches have been increasing since the 1996–97 fishing year. The 2003–04 fishing year recorded the highest catches since 1986. The nine-month catch to June 2005, for the 2004–05 season, is the highest on record.

31 The company notes the commercial catch made within the 2003–04 fishing year was within 5% of the TACC. It is probable the TACC will be reached and possibly exceeded in the current fishing year. Northern Inshore contend that increasing commercial catches suggest improved fishery performance. Therefore, MFish needs to update the CPUE analysis before any sustainability decisions are made for this fishstock.

32 Northern Inshore notes the assessment of sustainability for the GMU 1 stock is based on a standardised CPUE analysis undertaken by Watson et al. 2005. The analysis covers the years 1989–90 to 2001–02. Northern Inshore believes that sustainability decisions must relate to the current performance of the fishery. It is irresponsible to base decisions on an analysis that is at least two years out of date. Northern Inshore advises that they have made repeated requests to MFish to update the GMU 1 CPUE analysis to the end of the 2003–04 fishing year.

Target biomass

33 Northern Inshore does not consider that a significant reduction in the size of the GMU 1 stock because of past fishing history is a problem. The company notes the mandate of MFish is to manage the stock at or above the level that maximum sustainable yield (MSY) can be produced, not to manage it near the unfished biomass. The company notes that it is likely the MSY level for GMU 1 would involve a significant reduction in the biomass relative to virgin biomass.

Use of stock assessment

34 Northern Inshore considers the statement that recent catches from the west coast are unlikely to be sustainable should be based on a stock assessment. Otherwise, the company believes it remains a speculative opinion. MFish needs to back up such an opinion, given the complex nature of the fishery and the unknown relationship between the various sub-stocks and sub-areas.

35 Northern Inshore believes interpreting a CPUE index should be made in the context of a stock assessment considered by the Inshore Stock Assessment Working Group and reported through the assessment plenary. Northern Inshore suggests the analysis in the IPP was ad hoc and independent of the MFish assessment plenary.

36 The company considers the IPP discounts the previously tried stock assessment, as reported for the west coast part of the GMU 1 stock in the 2005 plenary document. The stock assessment shows the CPUE and catch at age data are inconsistent, with the CPUE data implying a greater degree of abundance change than the catch-at-age data. The company suggests that while such discrepancies occur in fisheries data, they need further investigation. The company submits that MFish has not commissioned or considered further investigation.

Reference to MCY estimate

37 Northern Inshore believes that MFish has placed emphasis on maximum constant yield (MCY) estimates. MFish refers (paragraph 154) to a new estimate of maximum

constant yield presented by Beentjes[3] as illustrating a need for a more conservative approach to setting the TAC and TACC. The company notes the Inshore Stock Assessment Working Group concluded that for the GMU 1 stock "Method 4" is unlikely to provide a reliable estimate of MCY (or MSY) for the following reasons:

- Because of the long history of inshore fisheries, any period of stable abundance for which reliable data exist (i.e. post 1989) is unlikely to correspond with the BMSY;
- The method is crude and unreliable.

38 The company submits the Inshore Stock Assessment Working Group recommended that TACC adjustments should be based on more reliable stock assessments. Further, the 2005 Plenary does not recognize the new MCY estimate. The Inshore Stock Assessment Working Group did not accept the new estimate when it was presented at a meeting in April 2005. The company considers inclusion of the new estimate of MCY to suggest a sustainability concern is both mischievous and misleading. Northern Inshore considers its inclusion was at odds with expectations for officials to prepare impartial advice.

Anecdotal information

39 Northern Inshore notes the view of MFish that there is anecdotal evidence of localized depletion in certain areas and increased fishing effort in some areas to uphold catch levels. The company submits there is no further information or analysis to enable the decision maker to place this "anecdotal evidence" in the context of management at the stock level. The company queries:

- Where are the areas where localised depletion and increased fishing effort are occurring;
- What proportion of the stock do they represent;
- Whether these claims are supported by scientific evidence;
- Whether these observations are placed in context with the known natural variability of the stock; and
- Whether MFish has presented all anecdotal opinions on the state of the fishery, including anecdotal reports that present contradictory views e.g. minutes of meeting of Northern Inshore Fisheries on the Kaipara where several commercial fishers report good fishery performance.

40 The company questions whether the advice is clearly provided to the Minister as to what choices are available to address "localised" concerns that would best meet the purpose of the Act. Northern Inshore believes there is inadequate information for the Minister to be able to consider the anecdotal evidence and accord it due weight in his decision-making.

41 Northern Inshore also believes that MFish is giving undue weight to anecdotal evidence presented by some stakeholders that the sustainability of current catches is

[3] Beentjes. M.P. Review of TACCS and MCYs for grey mullet (GMU 1), flatfish (FLA1) and rig (SPO 1). Draft working group report.

compromised and there is local depletion of various harbour stocks. The company considers the IPP has not considered evidence from the commercial fishery that:

- Grey mullet catches are significantly higher than in recent historic times;
- Sheds are placing limits on commercial landings; and
- A significant number of commercial fishers have no concerns over the availability of fish in the harbours.

42 The anecdotal evidence also does not recognise that over the last few years commercial catches have been increasing in the Kaipara that, without an updated CPUE analysis, may signal that abundance is increasing in this area.

43 **Te Ohu** also disagrees with the way anecdotal information is used in the IPP to support particular management options that cannot be justified on sustainability grounds. Te Ohu notes the anecdotal information has been used as a reason to support claims of uncertainty, which is then used to justify the proposed precautionary approach. Te Ohu states that this situation, combined with concerns about political influence and lack of objectivity, lead them to the opinion that reallocation of available catch may already be a *fait accompli.*

MFish discussion

Deferral of management action

44 MFish does not agree that management action should be deferred on the basis suggested by Northern Inshore. Increasing commercial catch in the 2003–04 and 2004–05 fishing year does not necessarily translate to a conclusion that the trend in relative abundance is improving. MFish is not aware of information from other sectors showing that they are similarly experiencing improved fishing success. Northern Inshore do not back up their claim that a declining trend in CPUE signals below average recruitment, and that this is relevant to some areas and not others.

45 MFish recognises there may be several sub-stocks within the GMU 1 complex, and that a degree of self-regulation of commercial fishing may occur. Commercial fishers may move to areas where catch rates are likely to be higher. However, MFish notes the areas that have been the mainstay of the fishery for decades have not changed. Commercial fishers are likely to rely on them significantly in the future. Accordingly, MFish does not think that reliance on self-regulation of commercial fishing effort will necessarily address the sustainability issues of concern for the stock. It might, but it might not.

46 Further, non-commercial fishers do not have the same flexibility or motive to move to another distant fishing spot. There is likely to be a reliance on fishing within a reasonable distance from their home. Further, MFish would query whether the catch rates experienced by commercial fishers in the so-called 'better localities' are in fact meeting the current expectations of all fishery interests.

47 Nevertheless, MFish considers that awaiting the outcome of the updated commercial CPUE index (early 2008) could either confirm or discount the anecdotal observations made by some industry representatives that the performance of the stock has improved

since the 2001–02 fishing year. In addition, further characterisation of the commercial use of the GMU 1 stock may be of assistance in interpreting sub-area trends in commercial CPUE.

48 MFish agrees with submitters that further information on the nature and extent of non-commercial fishing of grey mullet would be desirable. However, collection of robust information may take several years. This is because application of the existing generically applied diarist surveys for most species may or may not accurately capture the nature and extent of non-commercial use for grey mullet.

49 A review of sustainability measures for the GMU 1 stock requires the use of the best available information. A degree of caution should be applied when information is uncertain, unreliable, or inadequate. MFish notes that the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act. However, it is possible that the purpose of the Act is presently being achieved, although perhaps not at an optimal level. The question is more whether a cautious approach is warranted at this point in time. Such a judgement will need to consider the likely risks of sustainability concerns becoming apparent in the stock in the short to medium term.

General perceptions about the state of the stock

Regional observations

50 Non-commercial submitters support MFish's general view that the grey mullet resource within GMU 1 has been subject to intensive fishing pressure. Some commercial fishers for the stock further support this perspective, as it relates to the Kaipara Harbour. The extent of the information indicates that the problems with use of the fishery are not localised to any one area. Concerns about the relative abundance of grey mullet have been raised with MFish staff at public meetings, several hui, and through informal communications over a long period of time.

51 On 10 November 1998 experienced commercial set netters met with MFish in Auckland to discuss concerns they had about set netting fishing practices in the Kaipara and Manukau Harbours, the Waikato River and the Firth of Thames. Commercial fishers observed that flounder and mullet fisheries appeared to have declined over the last five years due to a combination of poor environmental conditions and increased fishing pressure.

52 These experienced commercial fishers observed that the fishing practices of some commercial set net fishers appear to have resulted in an unacceptable level of wastage due to dumping of juvenile and dead fish. Management problems identified included night setting, 18 hour soak time, large number of new entrants, TACC regularly undercaught, TACC set too high, QMA too large, patch fishing in Kaipara, and limit on net length in upper harbour waters. A subsequent meeting in Parnell, Auckland (April 1999) of many more commercial fishers (estimated at 100 people) from both the west and east coast reached a consensus that the status of grey mullet and flounder fisheries was unsatisfactory.

53 The need for a further review of the sustainability measures applied to the GMU 1 stock was signalled following the Minister's decision in 1998 to reduce the TAC and

TACC. Given the uncertainties in the stock assessment results that followed, a review was not undertaken then.

54 MFish understands that the Northern Inshore submission is referring to minutes of a meeting held in Kaiwaka in October 2004 involving about 25 commercial fishers with an interest in the fisheries for grey mullet, flatfish and rig. Some of these fishers believed the current gap between the TACC and the current catch levels for these fisheries created a large amount of available ACE and created an open access fishery environment. Some participants in the Kaiwaka meeting agreed with the observation that there was a declining trend in CPUE in the Kaipara Harbour, while others reported the grey mullet stock had never been fished better. Accordingly, MFish notes there did not seem to be a clear consensus among commercial fishers about the status of the fishery at the Kaiwaka meeting based on the minutes received.

East Northland

55 The Northland Fisheries Liaison Committee discussion of grey mullet related to changes in abundance viewed in Whangarei Harbour, the Kaipara Harbour and more generally across Northland. This was discussed at Northland Fisheries Liaison Committee meetings of November 1995, July 1996, December 1997, and December 1998. Those observations were that the grey mullet fishery had been in decline. Whangarei Harbour had been one of the best areas for catching grey mullet in the past, but it was also recognised that more recently schools could arrive and then depart from the Harbour quite quickly. More recent observations about the performance of the fishery in the Whangarei Harbour and more generally across East Northland are not available.

56 A commercial fisher provided advice of his own observations in the Whangarei Harbour to that Committee. His observations in July 1996 were that less grey mullet had been seen in the preceding two years, and that commercial fishers had increased the use of ring netting or 'plonking' fishing methods. An analysis by MAF Fisheries of catch and effort between late 1989 and 1995 provided to the Committee indicated that commercial catch peaked in the winter of 1990, 1991, and 1992. There was a poor season in 1993, little effort in 1994, and better catches in April 1995.

57 The Northern News published an article on 17 August 2005 quoting John Kenderdine of the Doubtless Bay Marine Protection Group. He states that 'one of the interesting things has been going back to historical documents. You see these photos of huge mullet, which just don't exist anymore…'.

West coast

58 Information from Waitangi Tribunal findings also provide both historical and more recent accounts of the use and values associated with the grey mullet fishery. The Manukau report (Wai 8: 1985) notes the importance of the Manukau Harbour and Waikato River to local Maori. Witnesses to this hearing claimed that commercial fishers were over-harvesting fish species, including grey mullet. Evidence was presented that tangata whenua had to fish further afield as a result of the localised depletion caused by commercial fishing.

59 However, some anecdotal accounts of the relative abundance of grey mullet support the view of some commercial submitters that the fishery is in reasonable shape. The Ministry has correspondence on file from Maurice Ashby, the chair of the Auckland Inshore Commercial Fishermans Association Inc., dated September 1996. The letter says that market prices in the preceding 10 months were affecting the viability of commercial fishing for grey mullet. Therefore, the TACC was not fully caught in the 1995–96 fishing year.

60 Similarly, it was observed at a Manukau Harbour Consultative Group meeting of 14 September 1995 held in Pukekohe that the market for this species could be fickle because of competition with other low-priced species, while the export market for grey mullet appears to have virtually collapsed. Nevertheless, at the same meeting, a general view was expressed that the Manukau Harbour grey mullet fishery is under pressure because of its greater accessibility to commercial fishers from throughout the large QMA.

61 At the June 1995 meeting of the same group, recreational interests noted that grey mullet fishing in the Manukau Harbour was not as good as it was as 20 years beforehand. Recreational fishing representatives noted that commercial fishers had significantly increased their fishing effort (ie, average net length), and this had impacted the fishery, and recreational fishing success, particularly in sheltered bays.

62 More recently, Mr Ashby further notes in the August 2005 edition of Seafood New Zealand that he considered there were plenty of grey mullet off the west coast. He also notes that one of his colleagues remarked that he had seen 'a school of grey mullet that was 10 km long'.

63 The Kaipara study group produced a document (December 2003) outlining a strategy to address the fishing pressure on the Kaipara Harbour. The study group's aim has been to provide for a sustainable fishery for the benefit of all fishery interests. You have already seen this document, and discussed with them the concerns held.

64 MFish also notes that a draft Whaingaroa (Raglan) Harbour Fisheries Plan (August 2004) was developed in response to concerns about localised depletion of harbour fish resources. These concerns are presented generically, and do not necessarily single out specific concerns with the grey mullet fishery. Grey mullet and flounder are the primary species of interest to commercial fishers in the harbour. MFish is aware that local commercial fishers did not wish to see further fishing effort in the harbour from other commercial fishing interests.

65 Overall, MFish considers there are a few information sources that suggest there are sustainability concerns for the GMU 1 stock, but there are some commercial interests who would disagree.

Commercial catch trends

66 MFish remarked in the IPP that commercial catch had increased in recent years – the catch reached about 5% below the TACC in the 2003-04 fishing year. For fishing returns due to have been supplied by 15 August 2005 (ie, catch until the end of July 2005), commercial catch for the 2004-05 fishing year had reached about 818 tonnes. This is 11.5% short of the TACC at 925 tonnes, with two fishing months to go.

67 An increasing trend in commercial catch in recent years does not necessarily translate to an improvement in fishery performance. The CPUE index provides a means to assess improvements in catch relative to the effort spent in getting that catch.

68 MFish notes Northern Inshore's observation that it disagrees with the view that approximately 75% of the commercial catch of GMU 1 has occurred on the west coast since 1998–99. MFish reiterates that it noted in the IPP that the relative importance of the west and east stock sub-areas was subject to change, although the west coast sub–areas have remained important for commercial fishers. MFish notes that Figure 2 of the Watson et al. 2005 report showing relative catch by sub-area is indicative only, as it is only includes set net data. The figure does not include ring net data. If ring netting occurs in approximately the same proportion as set netting in the various sub–areas, then it is possible that the Figure reasonably reflects the catch from the various sub-areas.

69 However, it is possible that more ring netting occurs on the west coast, given the nature of the harbour environments. Consequently, the overall catch from the west coast may remain relatively high. Until a more in-depth investigation is undertaken that characterises the use of different methods in the fishery, it is fair to say that commercial catch may fluctuate between the various sub-areas, but that the west coast proportion of the stock accounts for at least 60% of the catch in recent years. MFish also notes that there has been less reliance on the Kaipara Harbour as a harvest area in comparison to the mid to late 1990s, with increased landings being made in the Lower Waikato and East Northland sub-areas.

Interpretation of CPUE index

70 MFish notes the suggestion of Northern Inshore that there may be other reasons the CPUE index shows declining trends, rather than necessarily reflecting a drop in biomass. However, MFish maintains the view that the most likely interpretation that can be made relates to the level of biomass in the fishery. Discussion of several highlighted factors that might affect the CPUE index follow.

Change in mesh size

71 Northern Inshore suggest that commercial fishers have changed minimum net mesh sizes for grey mullet fishing, and this may alter the trend in the commercial CPUE index. The minimum set net mesh size was increased in the Auckland Fishery Management Area from 85mm to 90mm effective from 30 September 1993. The minimum set net mesh size recorded in the Stock Assessment Plenary document, at 89mm, is not correct. MFish notes that specific species sections of the Plenary document are not always updated in every year.

72 MFish would expect any impact of the change in minimum net mesh size on the commercial CPUE trends to be more clearer in the 1993-94 fishing year if most commercial fishers needed to change their fishing gear. There does not appear to be a discernable change in the commercial CPUE index at that time across all sub-areas within the stock. Further, MFish notes that in the Set Net Task Force Final Report of September 1991, where it is recommended to increase the minima from 85 to 90mm, mention is made that 'many commercial fishers are already using 90mm mesh'.

Set netting versus ring netting

73 MFish notes the commercial CPUE index for the GMU 1 stock is based on set netting records alone, and did not include records using the method code for ring netting. In addition, the set netting records were groomed for anomalies and errors. This accounts for the observed differences between more recently extracted information that Northern Inshore was provided (as set out in Appendix 1 of its submission), and the original data used in the commercial CPUE index research.

74 MFish accepts the distribution of total commercial GMU 1 catch between sub-areas would differ from the commercial set net catch data used in the CPUE index. Northern Inshore's comparison of sub-area catch in the 1995–96 and 2001–02 fishing years suggests, in MFish's view, that more weight should be placed on the commercial CPUE trend in the Manukau Harbour than East Northland. The Manukau shows a downward trend in CPUE in comparison to the stable East Northland area. However, the key point is the difference in catch assigned to each sub-area does not represent a discrepancy, but rather it reflects the different methods encompassed by the different data sets.

75 Inclusion of ring netting in the commercial CPUE index is more likely to give cause for concern about whether this would reflect the relative abundance of grey mullet. The index may overestimate the relative performance of the fishery in such circumstances.

76 Northern Inshore's suggestion that the index may have been affected by the increasing use of the ring-net fishing method, after and including 1998–99, is not correct on the rationale it provided. The company believed there was a change in the way that commercial fishers reported set netting from ring netting. In fact, the requirement to report set net separately from ring netting was previously specified in First and Second Schedules of the Fisheries (Reporting) Regulations 1990. MFish understands that separate reporting started with the introduction of Catch, Effort and Landing Returns in 1989. A reminder of the existing requirement to report set netting and ring netting separately was sent to commercial fishers in August 2000.

77 Nevertheless, it is possible the extent of ring netting is not accurately represented in Figure 2 of the Annex of the IPP. Some commercial fishers may have reported their ring netting as set netting in the early 1990s, and this may introduce an element of unreliability or uncertainty in the commercial CPUE indices. In such circumstances the index may provide a more favourable reflection of the relative abundance of the fishery than is the case. However, it is normal for research providers to remove obvious errors and anomalies through a grooming exercise before data is summarised. MFish believes that some errors and anomalies are still likely to exist, although the data set is quite large, and the effect of these records is likely to be minimised.

78 Ring netting probably began as a more commonly used method in the mid 1980s. Ring netting was documented as a suitable and commonly used method in more open reaches of the Manukau and Lower Waikato River in the late 1980s. Commercial fishers are likely to have changed to the ring netting method because it is more effective. Ring netting reportedly became more apparent in the Whangarei Harbour in the early 1990s.

Environmental health of northern harbours

79 A further explanation offered for declining commercial CPUE indices is the possibility the environmental health of west coast harbours is deteriorating. Irrespective of whether the cause of declining trends in commercial CPUE result from fishing pressure or environmental degradation, the outcome is the same. There is still a need to manage the catch to biomass levels that will produce MSY.

80 MFish notes that grey mullet may not be too affected by changes in the habitat around them over the medium term. Grey mullet typically feed on diatom algae and small invertebrates that are gulped with surface scum or with detrital bottom sediments. They therefore display a broad feeding strategy. Given their observed range into freshwater environments, it is likely that grey mullet are capable of tolerating changes in the quality of the aquatic environment, and the food sources that are available in such circumstances.

Effect of spatial agreements and closures

81 Northern Inshore also suggests that spatial agreements and closures among fishing interests in the Kaipara may have shifted commercial fishers away from productive areas to less productive areas. A local marae committee put a rāhui on commercial fishing in the waters near Tinopai, Kaipara Harbour, in 1997. This was subsequently developed into a regulated two year temporary closure to commercial fishing from 22 June 2000 through to 21 June 2002. The area involved was not large in comparison to other possible commercial fishing spots for grey mullet in the Kaipara Harbour. There are no obvious impacts on the commercial CPUE index for the Kaipara Harbour during the time of the regulated closure. The trend in the index continues its gradual decline from the preceding years at about the same rate.

Update of CPUE index and its interpretation

82 MFish has proposed a research project to update the commercial CPUE index through to the 2005–06 fishing year, to be undertaken in 2006-07. Some characterisation of the commercial use of the stock is also proposed to assist with interpretation. Fishery interests may offer qualitative observations on other factors that may help in interpreting the trends when that research is reviewed, probably before early 2008.

83 MFish does not recall Northern Inshore making repeated requests for an update of the commercial CPUE index to be done. Northern Inshore is likely to have only made this observation when attending Inshore Stock Assessment Working Group meetings. This would have been in response to MFish taking the initiative to put the research project on the agenda for discussion. The key point is that the research identified as important to be done is already being carried through the research planning process.

Use of stock assessment

84 In response to Northern Inshore, MFish observes that the ‘speculative opinion’ that recent catches from the west coast are unlikely to be sustainable is, in part, drawn from the minutes of the Inshore Stock Assessment Working Group of April 2005. The Inshore Stock Assessment Working Group had the Watson et al. (2005) report available to it in reaching the view that it did. MFish agrees that a stock assessment

for the stock would be desirable. However, the completion of a stock assessment is not essential in considering management action in light of the s 10 information principles in the Act.

85 MFish highlighted the attempt in 2000 to undertake a stock assessment in the Annex of the IPP (paragraph 155), and the inconclusive findings from that. MFish notes there was a disparity between the CPUE index and the catch-at-age information used in the model. The latter indicates that the stock is approximately 75% of virgin biomass, the former suggests a stock of approximately 28% of virgin biomass. Given the wide disparity in the outcomes, the stock assessment as it stands adds little certainty to the current assessment of the stock.

86 MFish has considered the need to collect ancillary information that would better refine the outcomes from the stock assessment modelling. Research project INS2003-01 is collecting further catch-at-age information. In addition, MFish considers that further research effort needs to be directed towards the GMU 1 stock. It would be useful to determine the selectivity of fishing gear, and better assess the mixing of component sub-stocks. Data from such investigations would be an important input into a revised stock assessment model.

87 MFish has also proposed to update the CPUE index through to the end of the 2005–06 fishing year in 2006–07. Research on gear selectivity and updating the CPUE index have both been included in the grey mullet section of the Medium Term Research Plan for Inshore Finfish. The Medium Term Research Plan for Inshore Finfish has previously been circulated to fishery interests including the corporate commercial submitters. Medium Term Research Plans typically set out likely avenues for research over a five-year time horizon.

88 Accordingly, a robust stock assessment is unlikely to be available for the GMU 1 stock until the above information is collected. Carrying out a stock assessment would also be dependent on the updated commercial CPUE index showing sufficient contrast in catch rates (either up or down). MFish believes that it might be appropriate to plan for a stock assessment for the 2008–09 fishing year, providing that ancillary information can be collected before then, or concurrently as part of research undertakings for the stock in that year. It is expected that results from any such stock assessment would be available for the review of sustainability measures process in 2010.

Managing at or above B_{MSY}

89 MFish notes that the stock size of the GMU 1 stock relative to B_{MSY} is unknown. MFish would like to see some consensus amongst fishery interests about the objectives sought for the stock, as it relates to whether the stock size should be managed at or above B_{MSY}. The approach MFish adopted in the IPP recognised that the present use of the fishery may be exposing the stock to some sustainability risk (against an unknown B_{MSY} level), and it is reasonable to consider options to reduce this risk. MFish considers this approach valid regardless of whether subsequent discussions determine that the stock should be managed at or above B_{MSY}.

90 The prolonged and high level of fishing in the past provides some context under which present proposals have been mooted. MFish considers that the intensive

fishing experienced by the stock over recent decades would be representative of a significant reduction in the biomass relative to virgin biomass. However, it is unlikely that this observation can be better qualified at this time.

91 MFish does not agree with the suggestion of Northern Inshore that MFish is attempting to manage the stock near a level of the unfished biomass. The current TAC and the proposed TAC options both provide for a significant level of use of the resource.

Reference to MCY estimate

92 MFish considers that inclusion of MCY information provides a better perspective on how past catch limits took the MCY estimate into account, while noting that its utility is now considered very limited in the current review. MFish does not agree with Northern Inshore that mention of this estimate gives rise to concerns about the impartiality of advice. The MCY estimate is not mentioned or used in the main body of the IPP other than noting in paragraph 6 that its use is not considered appropriate.

Assessment of Management Options

Total allowable catch

Submissions

93 **NZRFC** supports the Minister's statements that a number of shared inshore fisheries would be managed above B_{MSY}. NZRFC considers that a TAC of 985 tonnes, as proposed by Option 3 of the IPP, is the best of the three choices on offer, although it considers that a TAC below Option 3 would be preferable.

94 **NZRFC** and **option4** notes that grey mullet are an easily accessible species important for the social and cultural well-being of coastal and inland communities. NZRFC notes that grey mullet are recreationally fished as far inland as Huntly and Ngaruawahia and provide communities in a low socio-economic area with a valuable food source.

95 Given **option4**'s latter comments about Option 3c in the IPP, as it relates to allowances, it is inferred that option4 supports Option 3 for the TAC - ie, 985 tonnes.

96 The **Kaipara study group** seeks an explanation about the method used to calculate options for the proposed TACs in both the grey mullet and flatfish stocks. The Kaipara study group states that if current levels of harvest were considered unsustainable, it would be logical to consider options for a TAC below existing harvest levels. The Kaipara study group believes that the TAC should be set such that historical levels of CPUE are achieved.

97 The Kaipara study group suggest that other sources of fishing-related mortality from the GMU 1 stock is likely to be in the order of 50 tonnes based on their experience. The group have built in this estimate in proposing their recommended TAC of 950 tonnes for the GMU 1 stock.

98 The **Muriwai Sports Fishing Club Inc.** supports a TAC of 985 tonnes, as proposed by Option 3c in the IPP.

99 **Forest & Bird and ECO** submits the TAC should be set in line with Option 3, ie. 985 tonnes. These environmental representatives consider that a TAC set in line with Option 1 or 2 will not affect catches while commercial CPUE is declining. The reduction in catch limit must be below current catches to ensure that the fishery rebuilds on the west coast and that the east coast sub-stock is not subject to increases in fishing pressure.

100 Forest & Bird and ECO considers the need for action is based on the following factors:

- The observed decline in commercial CPUE in west coast fisheries with the strongest decline in the Kaipara fishery – the most recent catch rates are about a third of what they were in 1989-90;
- The uncertainty over the state of the stock with one interpretation being that the stock biomass was down to 28.5% of virgin biomass in 1997, and since then catch rates on the west coast continue to decline; and
- A shift in fishing effort, and therefore catch from declining areas on the west coast, including the Kaipara, to East Northland.

101 Forest & Bird and ECO submit that the QMS has effectively failed to manage the GMU 1 stock with a resultant build up of community and fisher concerns in a management vacuum. The fishery is an important shared fishery with a significant sustenance emphasis particularly in northern harbours.

102 **SeaFIC** is of the firm view that the proposed TAC/TACC reductions are unlikely to contribute to solving the poorly defined local access issues that have motivated the current IPP. SeaFIC considers that the proposed reductions are unlikely to be legally justifiable. Instead, SeaFIC supports retention of the existing TAC of 1 125 tonnes.

103 **Northern Inshore** notes that MFish has proposed TAC options that apply a degree of caution in the absence of more definitive information on the status of the stock relative to the level that can produce MSY. The company contend that the approach taken when proposing TAC options should not be tinged with paranoia that it removes the positive benefits of utilisation and undermines the purpose of the QMS. The company does not support any of the TAC options presented in the IPP.

104 The company observes that Options 2 and 3 propose reductions to the TAC to address sustainability concerns identified for 'much of the fishstock'. The company believes that these statements are misleading and are not backed up, based on best available information on the current state of the fishery.

105 The company contends that there is an apparent bias towards favouring Option 3 given the discussion in paragraphs 35-38 of the IPP. The company states that the presumption of these paragraphs is if the stock is below the MSY level (which is uncertain), then it is assumed that Option 3 is the best option simply because it will deliver increased abundance more quickly. However, neither of these assumptions is presented definitively: the stock could easily be above the MSY level at present and,

given the recent increasing levels of commercial catch, stock abundance appears to be already increasing.

106 The company notes that in presenting other qualitative matters that the Minister could consider (paragraph 46 of the IPP), MFish states that set net fisheries are grey mullet specific and that there are no other species for non-commercial fishers to target when there is reduced abundance of grey mullet. The company considers it remarkable, given the content of the IPP that MFish could have overlooked the flatfish and rig fisheries that are also targeted by set netting in harbours and estuaries.

107 The company observes that the evidence for a sustainability concern is weak and dated. The company considers that the IPP ignores other more favourable anecdotal evidence indicating that the performance of the fishery is showing a significant improvement over the last 5 years.

108 **Sanford** does not support any of the options presented in the IPP.

109 **Te Ohu** considers that a reduction in the TAC will do nothing to address the problem in the Kaipara, which is really about local access and local depletion. Te Ohu considers that there is no sustainability basis to justify the proposed reductions, that they are inappropriately arrived at and that they will result in devaluing the integrity of the QMS and the Fisheries Settlement if pursued. Te Ohu provide specific recommendations (eg, further analysis of management options and consequences of adopting them, including maintenance of the status quo) until improved information becomes available and the objectives-based management plan is developed.

MFish discussion

General observations

110 Submissions range from mostly non-commercial interests that support or do not oppose adoption of Option 3 for a TAC, to those of several commercial submitters who deny there is a sustainability issue, and reject all TAC options proposed. In addition, the Kaipara study group (made up of a range of sector group interests) suggest a TAC option slightly lower than that provided by Option 3.

111 Firstly, the status of the GMU 1 stock has been of concern to a number of interests, and this concern is not based solely on the Kaipara Harbour. Some of the concerns have been described in the previous section, as well as observations made in the IPP. MFish does not consider it problematic that one interest group raises concerns about the management objectives for a stock, or the performance of the fishery against certain expectations. These concerns may relate to a variety of geographical scales, and from a sustainability perspective, such concerns are of particular interest where similar observations have been made in other areas of the stock. Such concerns may, or may not, indicate an underlying problem with the TAC set for the stock.

112 The TAC review is one of several initiatives that may be required to address the issues facing the sustainable use of the GMU 1 fishery. The underlying problem in this specific review is whether the catch limit set for the stock is appropriately set, in accordance with the obligation under s 13, such that the purpose of the Act is met. The purpose of the Act is quite broad. Legislative considerations in s 13(3) are

directed towards providing for people's social, economic and cultural well-being when considering the way and rate of moving a stock towards or above a level that can produce MSY. While there may be some reduction in the utilisation opportunities over the short term that may affect these values, these should be offset by improved catch rates and increased availability of grey mullet over the longer term. In addition, the purpose of the Act emphasises that use must be able to be sustained.

113 In the absence of a clear objective (ie, whether to manage the stock at or at some level above B_{MSY}), MFish proposed TAC options in the IPP that would reduce the risk of exposing the stock to some sustainability risk, while still allowing for a significant level of use. This was considered reasonable given that indicators of relative biomass (ie, the trends in commercial CPUE) were either stable or declining. A reduction in catch of between 5-15% as proposed may enable the stock to stabilise while further information on the status and use of the stock is collected.

114 MFish notes that Northern Inshore contends that the reductions proposed to the TAC are 'tinged with paranoia'. The proposed TAC options still provide for a considerable amount of utilisation opportunity, with the prospect that those opportunities will be maintained or improved over the medium term. Nevertheless, you may elect not to adopt recommended options for a reduction in the TAC. Instead, you may elect to retain the status quo as similarly recommended as a viable choice. The status quo option is discussed further in the subsequent subsection entitled 'Which TAC option to proceed with?'

115 MFish notes that the Kaipara study group has suggested that the TAC should be set at a level where historical levels of commercial CPUE are achieved. However, the relationship between the TAC level set and commercial CPUE is not known. Further, MFish queries whether the Kaipara study group has recommended a TAC level without regard to the relative performance of the GMU 1 stock in other sub-areas. Commercial CPUE indices have been relatively stable in some areas (eg, East Northland), and declining in others (eg, Kaipara, Manukau).

116 The extent of improvement in a sub-area's commercial CPUE index will depend on the relative importance of the area under any revised TAC, and the harvesting strategy fishing interests adopt under any TAC implemented. In general, commercial fishing pressure may reduce (although not necessarily by the amount equivalent to any TACC reduction you may decide to adopt) in the sub-areas that have been the mainstay of the fishery (ie, Kaipara and Manukau Harbours). Alternatively, commercial fishing pressure might be reduced in certain sub-areas, and increased in others, should the status quo be retained.

117 MFish does not consider that a constraining TACC will necessarily focus commercial fishing activities to particular sub-areas. Several factors are likely to affect the distribution of commercial fishing effort. Shifting commercial fishing effort to areas of higher catch rate is one, but equally the cost of doing this may make the economic returns of marginal value. Consequently, monitoring the commercial CPUE indices at the various sub-areas and other indicators affecting commercial fishing activities is desirable. This would enable an assessment of the outcomes derived from a revised TAC, if any, assuming the TACC is also reduced.

118 MFish seeks to clarify its observation in paragraph 46 of the IPP that grey mullet are a target specific fishery, and there are few other species available for non-commercial fishers to target in the absence of grey mullet. Northern Inshore queries this observation given the presence of other species in harbour areas like flatfish and rig. The intent of this sentence was to note that the typically used grey mullet net has minimum net mesh sizes of 90 mm, yet such a net would not be able to be used to target other fisheries found in estuarine or coastal waters. The minimum net mesh size for a flatfish net is 114 mm or 125 mm for rig within the GMU 1 stock area. Kahawai may be targeted with a set net with a minimum 90 mm mesh.

Estimate of total removals from stock

119 The current TAC does not include an estimate of other sources of fishing related mortality.

120 The Kaipara study group have suggested that other sources of fishing-related mortality from the stock are likely to be in the order of 50 tonnes based on their experience. The group's view is not further backed up, particularly as to how well this estimate applies throughout the full extent of the stock. Sources of fishing-related mortality may be relatively high in the areas that the Kaipara study group are familiar with, than elsewhere. For example, commercial fishers are only allowed to stall set nets in the Kaipara Harbour – this is inconsistent with rules for set netting elsewhere in recognition that the harbour has extensive areas of sand-flats subject to tidal change. In addition, following the current review of sustainability measures for the GMU 1 stock, some of sources of fishing-related mortality may be reduced as fishers look more closely at their fishing practices.

121 Nevertheless, having considered the submission received, and following discussions with compliance staff, MFish now proposes to base the initial estimate of other sources of fishing-related mortality at approximately 4% of the existing TAC of 1125 tonnes (ie, 45 tonnes). This slightly increased estimate takes into account the likelihood that grey mullet, once gilled, are unlikely to survive, and secondly, that the fine monofilament nets used may be taking a greater size range of fish than what may have been taken using historical netting materials. MFish notes that flatfish are more likely to survive in a set net, as they are less likely to be gilled. Incorporating an estimate of other sources of fishing-related mortality into the assessment of total removals from the stock provides a better basis from which TAC recommendations can be considered under s 13 of the Act.

122 MFish notes that the 4% figure can be adjusted in future when better information is available. The revision of this estimate means that the estimate of total removals from the GMU 1 stock (ie, existing TAC and estimate of other sources of fishing-related mortality) is increased from 1159 tonnes to 1170 tonnes. Consequently, applying 5, 10 and 15% reductions to this figure provides revised TAC options of:

- Revised TAC Option 1 – 1111 tonnes (cf. 1101 tonnes);
- Revised TAC Option 2 – 1053 tonnes (cf. 1043 tonnes); and
- Revised TAC Option 3 – 994 tonnes (cf. 985 tonnes).

Social, cultural, and economic considerations

123 MFish acknowledges that grey mullet has social and cultural significance for some fishery interests. Those fishery interests consider that Option 3 is better able to meet their needs. Conversely, MFish is also aware that Option 3 may have a greater economic impact on some commercial fishery interests. Commercial fishery interests generally support the status quo. In making your decision, you will need to balance these factors when considering whether to make an adjustment to the TAC.

Which TAC option to proceed with?

Consideration of status quo

124 Given the uncertainty in information on an immediate sustainability concern, MFish considers that maintaining the current TAC is a valid option to consider.

125 Rationale to support this options includes:

- It is possible that declines in commercial CPUE, as an indicator of relative stock biomass, may stabilise as a result of commercial fishing effort moving to areas of higher catch rates, and presently, stable trends in commercial CPUE;
- It is not certain that the GMU 1 stock has a sustainability concern in the context of being below B_{MSY};
- Future research leading to a stock assessment over the medium term may better assess the status of the stock. Other new research to be proposed might better assess estimates of non-commercial catch and other sources of fishing-related mortality;
- Other fisheries management initiatives could be commenced to address both sustainability and utilisation concerns for the GMU 1 stock and associated species (eg, QMA subdivision, codes of practice, regulatory reviews (eg, possible repeal of ability to stall set nets in Kaipara Harbour, possible reduction in maximum soak time permitted, additional measures to protect Maui's dolphin such as extending closed areas);
- A range of such initiatives could be incorporated into a fisheries management plan that provides for the integration of issues and how they can be best addressed in priority order.

126 Conversely, maintaining the status quo could involve risks to both sustainability and utilisation (particularly for non-commercial stakeholders), in that:

- The present TAC does not include an estimate of other sources of fishing-related mortality, and no allowance has been provided for this removal from the stock;
- Commercial CPUE trends in the main areas of commercial fishing have shown declines, and the availability of grey mullet in such areas has reduced according to some submissions;
- The amount of research work required to better assess the status of the stock relative to B_{MSY} is not insignificant, and this will take at least four years on current timelines for research planning;

- The information principles in the Act (s 10) require you to adopt a cautious approach when information is uncertain, unreliable or inadequate, but retaining the status quo and considering other initiatives for the stock may still be acting in a cautious manner;

- The reduced abundance of grey mullet is causing conflict both between commercial and non-commercial fishers and between commercial fishers in some localities in the stock, and efforts to resolve such concerns are time consuming and the solutions not necessarily long-lived. These social, cultural and economic factors would need to be had regard to, if it is assumed that the stock is presently below the level that can produce MSY.

Consideration of revised TAC Option 1

127 The revised TAC Option 1 at 1 111 tonnes is only slightly lower (1.2%) than the existing TAC of 1 125 tonnes. Adoption of this option is unlikely to address the sustainability issues identified for the stock. In addition, should you elect to adopt a status quo position and retain the existing TAC, there seems little to be gained by adopting the revised TAC Option 1.

128 The risk of serial depletion occurring throughout the stock is likely to be greater under this TAC option in comparison to others. It is not known whether a TAC at this level will move the stock to a level that the MSY can be produced.

129 Rather than discounting the revised TAC Option 1, the alternative position is to adopt it, noting that it would have the least impact of the three options proposed. Having done that, fishery interests can define the management objectives for the stock. Subsequent management action can then revisit the TAC in light of any agreed management objectives.

130 The revised TAC Option 1, while relatively close to the existing TAC, does represent a step forward. This is because the option includes an estimate of other sources of fishing-related mortality that has not been incorporated into the existing TAC. As the estimate of other sources of fishing-related mortality is built into a new allowance, there will be a modest reduction in the TACC.

131 However, MFish does not consider that the difference between the existing TAC and the revised TAC is likely to reduce the risk of a sustainability concern for the stock in a meaningful way. MFish therefore does not recommend that a TAC be adopted based on Option 1. Alternatively, MFish considers that adopting the status quo will allow fishery interests the time required to collaboratively address the sustainability concerns in the fishery. MFish would also be able to fully assess other management options.

Consideration of revised TAC Option 2

132 The revised TAC Option 2 is 1053 tonnes. This is approximately 6.4% less than the existing TAC, although the current TAC does not include an estimate of other sources of fishing-related mortality. Adoption of a TAC at this level may begin to reduce the risk of exposing the stock to some sustainability concerns. A TAC at this level is

likely to result in the TACC being closer to or lower than the average recent commercial catch in the stock in comparison to the existing TACC.

Consideration of revised TAC Option 3

133 The revised TAC Option 3 is 994 tonnes. This is approximately 11.6% less than the existing TAC, although the current TAC does not include an estimate of other sources of fishing-related mortality. Adoption of a TAC at this level is likely to reduce the risk of exposing the stock to some sustainability concerns. A TAC at this level is likely to result in the TACC being lower than the average recent commercial catch in the stock.

134 There may be increased impacts on the social, cultural and economic well-being of people dependent on the resource in comparison to revised TAC Option 2. It is possible that any impacts in the short term will be offset by benefits in the longer term.

Summary of MFish position on TAC recommendations

135 MFish considers that the scientific information on stock status of grey mullet is uncertain. There is no information to indicate whether the current stock size if above or below the size that can produce the MSY. A decline in CPUE has been observed in some areas of the QMA, however whether this decline represents a sustainability concern or localized depletion of grey mullet is not known. Recreational and commercial fishers are at odds over the status of the stock. Recreational fishers (and some commercial fishers) suggest there has been a decline in abundance, whereas other commercial fishers dispute this view.

136 As the current biomass relative to B_{MSY} is not known, nor is there reliable estimates of sustainable yield, it is not known whether these commercial CPUE trends compel you to act immediately.

137 New information assessing CPUE data from the fishery could be available for use in management decisions in 2007–08. This information could help inform sustainability risk to the stock.

138 The decision that you make for the 2005–06 fishing year should be based on the degree of risk to the stock you consider acceptable. MFish does not consider the current degree of sustainability risk to the stock to be high. However there is uncertainty in information on stock status, and the fishery is important to all stakeholders, accordingly it would be reasonable for you to take a risk adverse approach based on declining CPUE in some areas of the stock and reduce the TAC. However there is no information on which to base a sustainable catch limit, and as such, the benefits of such management action in preventing a decline in biomass, if one is occurring, or managing localised depletion issues, are unknown. In such circumstances you should consider the impacts of management action on users of the resource. Socio-economic information on the impacts of the TAC reductions is outlined in detail in the allowance section of the paper.

Table 2: Management choices for GMU 1 stock following consideration of TAC options

Option	Approach to setting recreational allowance & TACC	Proposed TAC (tonnes)	Customary allowance (tonnes)	Recreational allowance (tonnes)	Other sources of fishing-related mortality (tonnes)	Proposed TACC (tonnes)
Status quo	-	1 125	100	100	-	925
2a	Proportional	1 053	100	80	42	831
2b	Non-proportional	1 053	100	100	42	811
2c	Non-proportional	1 053	150	150	42	711
3a	Proportional	994	100	70	40	784
3b	Non-proportional	994	100	100	40	754
3c	Non-proportional	994	150	150	40	654

Recreational and Customary Allowances

Submissions

139 **NZRFC** considers the implementation of an allowance for recreational and customary fishing interests of 150 tonnes respectively, consistent with Option 3c, as the best of the options presented, although it considers that the low estimate of recreational catch is flawed. NZRFC notes that non-commercial allowances should be set at a level sufficient to cover current or expected non-commercial catch. NZRFC observes that non-commercial access has been adversely affected by lack of constraint on commercial catch.

140 NZRFC observes that recreational catch levels will be subject to review, once better information is available. Concern is also expressed that the recreational catch levels experienced in more recent times may not be representative of a fair amount given that the fishery is so seriously depleted.

141 **option4** advises that the commercial sector has had priority in the GMU 1 stock since its introduction into the QMS. option4 and NZRFC state that the excessive quota made available to the commercial sector has determined the biomass available to non-commercial fishers.

142 option4 notes that grey mullet are considered a treasure by Maori, and with its depletion, their social and cultural needs are no longer being met. option4 refers to the ability and importance of Maori being able to exhibit manaakitanga towards visitors. The concept of manaakitanga relates to hospitality, generosity and kindness to guests (manuhiri).

143 option4 observes that there have been two hui held with Ngapuhi in recent months (eg, at Whakamaharatanga marae in the Hokianga) that clearly stated there were too few fish in the water to meet the needs or aspirations of Maori, whether they are fishing to feed their families (as categorised as recreational fishing), or for customary

fishing. option4 considers that ongoing mismanagement of shared inshore fisheries has come at a high social, cultural and economic cost for Maori.

144 option4 believes that the IPP contains seriously flawed advice on supposedly proportional cuts that could see non-commercial allowances set or confirmed on the basis of known underestimates of catch in a depleted fishery. option4 are concerned that proportional options seek to reduce non-commercial catch further after constraining them to the known under allowance.

145 option4 recommends adoption of Option 3c as a minimum first step; this provides an allowance of 150 tonnes for both recreational fishing interests and customary Maori fishing interests. option4 notes that the actual commercial catch will be cut by a much lesser proportion than its purported "proportion" because of the excessive quota commercial interests have been given. option4 submits that non-commercial allowances should be set at a level sufficient to cover current or expected non−commercial catch.

146 The **Kaipara study group** observes that there are inconsistencies between the approach taken in determining proposed allowances for customary and recreational catch. The Kaipara study group notes that current use is fully allocated for in the FLA 1 stock. Alternatively, in the GMU 1 stock, there is a proposal to proportionally reduce the recreational allowance. Customary take would effectively be frozen, even though the customary take is likely to already be much higher than the amount proposed for the allowance. The Kaipara study group considers the whole discussion provided around allocation, when setting the TACC, to lack credibility.

147 The Kaipara study group advises that they are unaware of any existing policy basis for giving recreational fishers a proportionally smaller share of the fishery. The Kaipara study group recalls that the deputy chief executive of MFish, during consultations on the Fisheries (Kaimoana Customary Fishing) Regulations 1998, promised iwi that their customary take would always be provided for, consistent with the intent of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. The Kaipara study group consider that allocating less customary allowance than what is presently taken for this purpose would represent a 'policy gap'.

148 The Kaipara study group recommends that allowances for recreational and customary fishing interests should be set at 150 tonnes respectively.

149 The **Muriwai Sports Fishing Club Inc.** notes that recreational catch estimates and allowances are uncertain and may be subject to review when better catch information becomes available. The club submits that recreational allowances should be set at a level capable of covering the current level of recreational catch and allowing a margin sufficient to accommodate the expected and anticipated increase in recreational activity in this fishery. The club supports the setting of a recreational and customary allowance of 150 tonnes respectively, as proposed in Option 3c of the IPP.

150 Club members emphatically reject the concept of (a) proportional share for recreational fishers and (b) that the recreational sector is responsible for the unsustainable fishing of GMU 1 and should bear further restraints in catch to assist rebuilding of the stock. The Club attributes the decline in the fishery to over-fishing

by commercial fishers and to mismanagement of the respective fisheries through the QMS.

151 **Forest & Bird and ECO** supports retention of the customary allowance of 100 tonnes given the importance of the customary catch. Similarly, environmental representatives support retention of the recreational catch at 100 tonnes. However, environmental representatives conclude their submission by noting support for a recreational allowance of 150 tonnes and customary allowance of 150 tonnes, in line with Option 3c.

152 **TRAION** notes that the hapu of Ngapuhi actively exercise their customary rights and responsibilities of kaitiaki throughout the rohe. TRAION advises that their traditional cultural practices continue to closely tie Ngapuhi to their inland and coastal waters.

153 **SeaFIC** supports a proportional approach to allocation of shared fisheries on the basis that all stakeholders should contribute to the rebuild of resources. This position assumes that all sectors are to a lesser or greater degree responsible for the present state of the fishery. Further, it assumes that the level of catch reduction achieved from each contributing sector is of some consequence to the overall reduction required. SeaFIC notes its strong objection to the proposed TACC cuts and increased allocation to recreational interests.

154 **Northern Inshore** suggests that the core problem with the options for TAC, TACCs and allowances is that they presume the proposed allowances have actual meaning in the fishery.

155 Northern Inshore reiterates that it only supports a proportional approach to allocation of allowances and commercial harvesting rights, in the absence of a compensation or trade of property rights. The company contends that the Minister has not been advised in the IPP that, in the absence of proportional allocation, then commercial fishers could seek compensation under s 308 of the Act. Northern Inshore supports SeaFIC's submission about proportional allocation and compensation.

156 Northern Inshore submits MFish states, without adequate justification, that the best available information indicates the needs of the recreational sector are more likely to be in the order of 150 tones than 100 tonnes. The best available information from the 2005 Assessment Plenary would be that this is more likely to be in the order of 100 tonnes.

157 The company states that the IPP does not acknowledge the uncertainties associated with the estimates of recreational catch, other than to say, without any justification, that 100 tonnes is too low (paragraph 58 of the IPP). The company considers that the proposed "allowances" are unvalidiated. The IPP proposes no way of ensuring these allowances would be monitored and managed in such a way that catches would stay within the proposed levels. The company notes that the allowances made for customary use for GMU 1, FLA 1 and SPO 1 demonstrate no initiative or efforts made by the MFish to define, assess or quantify current customary use.

158 Customary use is regulated through the authorisation system in the customary regulations and is restricted to hui and tangi only under regulation 27 of the amateur fishing regulations. This means that family (subsistence) fishing predominantly

undertaken by Maori should be classified rightly or wrongly as recreational fishing. Northern Inshore fully support the approach promoted by Te Ohu for deriving realistic estimates of customary fishing for marae use, based on available information on the number of marae and their whereabouts in respective QMAs.

159 The current approach is seen as ad hoc allocation made on the basis of poor recreational use estimates that are subjective and of uncertain value. Northern Inshore believes that the extrapolation of new information based on bad information has no place in responsible fisheries management when better sources of information are readily available. Assessment of marae use can be used to provide an initial estimate and later reviewed as the customary framework of rohe moana and associated reporting is completed across the QMA.

160 Northern Inshore supports SeaFIC's comments that in the absence of management controls for grey mullet (ie, bag or size limits), then there is no requirement or incentive for an application for customary use of this stock and therefore it is not apparent how MFish can defend its position and options for allowances for customary use for this stock.

161 Northern Inshore conclude by rejecting any utility based management framework in the absence of tradeable property rights or agreed compensation.

162 **Sanford** does not support any of the options presented in the IPP.

163 **Te Ohu** disagrees with all non-proportional options and recommends that the status quo be retained for the GMU 1 stock.

MFish discussion

Recreational catch estimates

164 MFish's assessment of recreational catch is based on the research survey information collected over the 1990s, after the period of highest commercial effort in the mid 1980s. The research findings are problematic in terms of their accuracy. This was noted in the IPP. Northern Inshore states the 2005 Plenary report advises that the best available information for recreational catch is 'more likely to be in the order of 100 tonnes'. In fact, the 2005 Plenary document states 'it is likely the annual level of recreational extraction from GMU 1 is in the order of 100-150 tonnes'.

165 MFish wishes to clarify that it is not suggesting that recreational catch has necessarily increased from 100 to 150 tonnes. MFish are of the view that the estimate of recent recreation catch has not been well determined. The 2005 Plenary supports this view. The intent of the IPP was to base an allowance on the most likely tonnage taken in the stock, while considering the expected growth in demand over the short term.

166 MFish is not attempting to necessarily reallocate catch from one sector to another, but simply trying to determine what is the more likely catch associated with the recreational sector beyond the considerations made in 1998. It is probably a reasonable assumption that recreational catch has not increased since 1998 (and earlier), particularly if the commercial CPUE index indicates that trends of relative biomass have either been stable or have declined. In the future, once a reliable

estimate of recreational catch has been determined, it will be more apparent that a decision to alter the allowance for recreational fishers is in fact a reallocation in a deliberate sense.

167 MFish also wishes to point out that given the inaccuracy about the point estimates of recreational catch, the proposed recreational allowance could potentially represent a 'reallocation' from the recreational sector to the commercial sector. MFish does not see the merit in reaching a premature conclusion that a reallocation, in either direction, is occurring at this time for this stock. MFish considers that such a position can only be realistically considered when there is some certainty about the level of recreational catch estimates, and how much a particular proposal deviates from such levels.

168 MFish has reviewed its approach to the use of recreational survey data for the GMU 1 stock. Recreational catch estimates collected in 1996 are considered by the Recreational Stock Assessment Working Group to be under-estimated, and because of methodological errors, unreliable. The same holds true for the 1993–94 recreational survey information. Further, the Recreational Stock Assessment Working Group considered that the point estimates associated with the recreational surveys undertaken in 1999–00 and 2000–01 were implausibly high 'for some important fisheries' (eg, snapper). The subsequent use of recreational catch estimates has been assessed on a case-by-case basis.

169 MFish notes that the number of diarists involved in the recreational catch surveys for 1999–00 (at 28 people) and 2000–01 (at 32 people) for the GMU 1 stock were relatively low compared to other fishstocks. It is therefore not surprising that the estimates of recreational catch from both these surveys were quite different, and therefore unreliable.

Proportional vs. non-proportional approach to determining recreational allowance

General observations

170 MFish refers you to the generic discussion in the front part of the Final Advice Paper about the two approaches for deriving an allowance for recreational fishing interests when considering a TACC. The generic discussion considers the pros and cons of each approach that could be applied, and notes that you have discretion to make a choice having assessed whether there are factors that might give more weight to one or other approach.

171 MFish also notes that, in real terms, some of the non-proportional options for determining a recreational allowance when considering a TACC, will not differ significantly from a proportional approach (eg, Option 2b). This is also the case if the recommended TACC options are compared to average annual recent commercial catch (ie, ~800 tonnes), rather than just the present TACC. Nevertheless, the reduction from the present TACC still represents a potential loss in revenue.

172 A further consideration is to take into account the uncertainty surrounding the estimates of recreational catch. With such uncertainty, the importance of whether a proportional or non-proportional approach is applied is diminished in the short term.

This is because gauging the impact of any reduced allowance is not possible at present. However, this is not to say that this reasoning should be used beyond a reasonable timeframe.

173 Obtaining greater certainty for recreational catch estimates, and characterising how recreational interests take grey mullet, would be of more consequence to management outcomes in the future. Making a decision about proportionality can be taken at that time, if required, and the consequences of such an approach can be incorporated into subsequent management actions with more certainty (eg, bag limit adjustment).

Arguments for and against a non-proportional approach

Effects of commercial fishing on state of GMU 1 stock

174 MFish acknowledges that non-commercial catch has been affected by commercial fishing activity, and the catch limit set for the GMU 1 stock since 1986 has not provided a constraint. Non-commercial representatives observe that the present state of the fishery has been disproportionately affected by commercial fishing activities.

175 MFish observes that the average annual commercial catch between 1974 and 1981 was 456 tonnes, whereas annual average recent commercial catch has been at a level of approximately 800 tonnes. In the 2003–04 fishing year, commercial catch increased to a level of 882 tonnes. A similar proportional increase in recreational catch is unlikely to have occurred over the preceding decades or more recently, given potential limitations to access the resource and the method limitations in place.

176 However, the nature and extent of the impacts of commercial fishing on recreational catch estimates is not known in a quantitative sense. MFish is nonetheless aware of the strongly held views by non-commercial interests in the stock that these impacts are considered of significance. Non-commercial interests note that a depleted fishery has denied them a reasonable basis on which to access the resource. Some commercial fishers, within the Kaipara Harbour, are equally concerned about fishing practices that have been adopted in order to secure an economically viable catch. These fishers are concerned about the effects within the commercial sector, and between commercial and non-commercial fishing sectors.

177 Those concerns relate to a number of matters including wastage, improvements in fishing technology, increased effort (eg, average net length). Some of these concerns are likely to similarly apply to other areas of the stock (eg, increased use of ring netting, changes in net mesh to monofilament). There is also an unquantifiable level of illegal fishing related to commercial fishing, beyond that considered as poaching. Such offending is likely to be of greater consequence than that made by non-commercial fishing interests.

178 You may also wish to consider whether environmental conditions (ie, habitat degradation) in parts of the stock are likely to have played a part in the present state of the stock, rather than fishing activities. MFish does not consider that this is likely to be significant given the behavioural ecology of the species.

Relative importance of approach applied given uncertainties in recreational use of GMU 1 stock

179 Given the uncertainty associated with estimates of recreational catch, it may be appropriate to not entertain an increase in the existing recreational allowance until such time that better information is available. Increasing the existing recreational allowance (options suffixed with 'c') would represent application of a non-proportional approach of greater magnitude than retaining the existing allowance of 100 tonnes (options suffixed with 'b').

180 Alternatively, an increase beyond the existing allowance may provide greater assurance that the actual catch is accommodated within the allowance determined. In this respect, MFish is of the view that a value of 150 tonnes is well within the range of possible GMU 1 catch made by the recreational sector on an annual basis over the last decade.

181 The question then becomes whether application of a non-proportional approach to the degree envisaged by options suffixed with 'c' is warranted, based on an assessment of the likely impact of past and current commercial fishing on the stock, and the consequent impact on recreational fishing success. You are also required to have regard to the TAC that you wish to implement. For example, selecting Option 3c would have significantly more impact on the commercial sector than Option 2c.

Implications of adopting a non-proportional approach

182 SeaFIC considers that adopting a non-proportional approach to setting allowances may lead to a situation where perverse incentives are created for both commercial and recreational sectors. MFish does not believe that the commercial interests in the GMU 1 stock are likely to go out of their way to collectively fish the full extent of the TACC for fear that unfished quota shares will be reallocated to the recreational sector.

183 MFish notes that the participants in the commercial fishery are numerous, have varying degrees of dependence on the fishery, and are subject to change over time. Further, the value of the fishery is relatively low, and it would not be in a commercial fisher's best interests over the short term to fish in such a manner, let alone the longer term.

184 Similarly, it is unrealistic to expect the many thousands of recreational fishers to collectively expand their catch with a view to proposing that the recreational allowance should be further reviewed. Most recreational fishers are not motivated to go fishing for such reasons.

185 MFish does not have the information available to assess whether the existing bag limit and method restrictions for grey mullet are constraining catch to the present recreational allowance of 100 tonnes. MFish believes further research to characterise the non-commercial use of the grey mullet fishery would be desirable to ensure firstly that the allowance is set at an appropriate level, and secondly, to ensure that measures in place for the recreational fishery are appropriate for the allowance set.

Existing measures to manage recreational catch

186 In response to Northern Inshore and SeaFIC, MFish notes that there are restrictions in place for recreational fishing of grey mullet. Some of those measures include:

- Various controls on amateur net fishing, including a limit of one net per person; nets to be hauled by hand; nets not to extend across more than one-quarter of the width of any channel; net not to exceed 60 m in length; nor be set within 60 m of another net; stranding is not allowed; drag net not to exceed 40 m, and total warp length not exceeding 200 m;
- Daily bag limit of 30 grey mullet per person;
- The minimum set net mesh size for grey mullet is 90 mm, and 85 mm for drag net, in the Auckland and Kermadec fishery management area; and
- Amateur set netting is prohibited in defined areas, including within four nautical miles of much of the west coast from north of Dargaville extending past the southern boundary for the GMU 1 stock, and within the entrance to the Manukau Harbour.

Further discussion on some of the existing measures and some of the suggested measures for the recreational sector are outlined in the 'Other Management Issues' section of the Final Advice Paper.

Discussion of proportional approach

187 A reduction in the recreational allowance by either 20 tonnes (Option 2a) or 30 tonnes (Option 3a) could still be justified. MFish refers you to the generic discussion on the preference for a proportional approach to allocation as outlined at the front of this Final Advice Paper. As a default approach, it reflects the case where there is no particular reason to reallocate between sectors. However, such an approach does not limit your discretion to recognise the competing demands on a resource by changing the relative proportions of the TAC allocated to each sector. Further, no explicit process has yet been undertaken to set the proportions of the GMU 1 fishery allocated to each sector. To translate the current allowances into a proportional share would create the proportions by default rather than through an explicit process.

188 Management options suffixed as option 'a' represent application of a proportional approach to both the recreational allowance and the TACC. The amount that would need to be reduced is either 20 tonnes (Option 2a) or 30 tonnes (Option 3a). This represents a quantity of only 2% of the revised TAC Option 2 and 3% of the revised TAC Option 3. Given the considerable uncertainty around the estimates of recreational catch, it is not possible at this time to gauge whether any reduction in the recreational allowance would give rise to actual reductions in real catch by this sector, should additional measures be put in place.

189 Recreational catch may have increased up until the 1980s when grey mullet was probably more plentiful. In addition, some increase in recreational catch could be attributed to increases in human population, and therefore the number of people fishing for recreational purposes. However, increased catch related to an increase in the fishing population may have reached a plateau since the mid 1980s. The resource may have become more difficult to access.

Difference between GMU 1 and FLA 1 recreational allowance

190 The Kaipara study group queries the difference between the approach taken in determining a recreational allowance for the northern flatfish (FLA 1) and GMU 1 stocks. The GMU 1 stock already had a recreational allowance in place whereas the FLA 1 stock did not. There was more flexibility to provide options that recognised estimated recreational use in the FLA 1 stock than that in the GMU 1 fishery.

Regulations arising from s 311 of the Act

191 Section 21(5) of the Act provides you shall take into account any regulations that prohibit or restrict fishing made following a recommendation made by the Minister under s 311 of the Act when considering recreational allowances. MFish notes that there are no such regulations in place for the GMU 1 stock.

Customary catch allowance

192 The Kaipara study group has incorrectly stated MFish proposes to reduce customary catch allowances from existing levels. Paragraph 54 of the IPP notes that proposed customary catch allowances are not reduced from existing levels, even though in some of the proposed options (those suffixed with 'a'), recreational and commercial catch are proportionally reduced.

193 MFish notes the general submission from TRAION underlining the significance of customary fishing activities to the traditional values of the Ngapuhi people, as practiced at the present day. Similarly, other iwi within the stock regard grey mullet as an important element of their cultural heritage.

194 As the customary catch allowance is based on recreational catch estimates, and as those estimates are uncertain, MFish does not have a particular preference for which customary catch allowance should be chosen (ie, 100 or 150 tonnes). On the same basis noted for the consideration of recreational allowances, it may be appropriate to retain a customary allowance of 100 tonnes until better information on either or both recreational and customary catch is available.

195 MFish may be able to investigate the prospect of undertaking customary fisheries research where this facilitates the collection of such information. This may provide more comprehensive information at one time than that gathered through the Fisheries (Kaimoana Customary Fishing) Regulations 1998 over a longer period of time.

196 MFish notes that Northern Inshore and SeaFIC incorrectly suggest that there are no management controls in place for the grey mullet recreational fishery, which would necessitate the use of customary fishing authorisations. MFish has listed several measures that are in place (eg, bag limit) in the IPP, and again in the preceding section on the approach to determining the recreational allowance. The presence of these measures means that customary authorisations will be required for traditional hui and tangi purposes.

197 When making decisions regarding an allowance to any sector there is no obligation requiring you to only take into account factors such as actual catch. MFish notes that the allowance should take into account the importance of the resource to that sector which may not be reflected by estimates of actual catch in recent times.

198 The recommended allowances for customary Maori interests has not been adjusted as a result of taking into account the recent declaration (12 August 2005) of a mätaitai at Raukokore, in the eastern Bay of Plenty. MFish is not aware of grey mullet being an important component of traditional or current customary fishing activities in this coastal area, to the extent that the customary allowance should be altered. In addition, there are no relevant area closures or fishing method restrictions or prohibitions within the GMU 1 stock that have been made under s 186A which materially affect the recommendations for the customary allowances made.

199 Having considered the approach to making allowances for recreational and customary fishing interests in comparison to the TACC, Table 3 outlines the remaining options that MFish recommend. MFish notes that options suffixed 'b' do not represent as significant a non-proportional approach as options suffixed 'c'.

Table 3: Management choices for GMU 1 stock following consideration of TAC options, and approach to allocation between recreational and commercial fishers

Option	Approach to setting recreational allowance & TACC	Proposed TAC (tonnes)	Customary allowance (tonnes)	Recreational allowance (tonnes)	Other sources of fishing-related mortality (tonnes)	Proposed TACC (tonnes)
Status quo	-	1 125	100	100	-	925
2a	Proportional	1 053	100	80	42	831
2b	Non-proportional	1 053	100	100	42	811
2c	Non-proportional	1 053	150	150	42	711
3a	Proportional	994	100	70	40	784
3b	Non-proportional	994	100	100	40	754
3c	Non-proportional	994	150	150	40	654

Other Sources of Fishing-Related Mortality

Submissions

200 **NZRFC** and the **Muriwai Sports Fishing Club Inc.** considers that the implementation of an allowance for other sources of fishing-related mortality of 30 tonnes, consistent with Option 3c, is the best of the options provided.

201 The **Kaipara study group** consider that the proposed allowance for other sources of fishing-related mortality are arbitrary and underestimated based on the knowledge and experience of the Kaipara study group. If the Kaipara study group's code of practice is not implemented, it is suggested that a figure of 50 tonnes would represent a true figure of fishing-related mortality if current fishing practices were allowed to continue.

202 **Forest & Bird and ECO** supports an allowance of 30 tonnes being made in line with Option 3c of the IPP.

203 **Northern Inshore** notes that the IPP (at paragraph 22 and 53) acknowledges that the allowances for other sources of fishing-related mortality is completely unknown. The company states that no basis is presented from moving from a 10% estimate of non-reported mortalities to 3%. However, it is not clear that the company is suggesting that 10% should be the basis for the allowance.

204 **Sanford** does not support any of the options presented in the IPP.

MFish discussion

205 MFish has revised the estimate of other sources of fishing-related mortality used in determining the total removals from the fishery, and consequently, the revised TAC options. The proposed estimate has been increased to a level approximating 4% of the existing TAC. MFish notes that there is no substantive information available that would necessarily support a much higher value (eg, 10%) to calculate the allowance.

206 A level of 4% is also used in calculating proposed allowances for other sources of fishing-related mortality for the revised TAC options of 1053 tonnes (Option 2) and 994 tonnes (Option 3). The resulting allowance recommendations are 42 tonnes and 40 tonnes respectively.

207 MFish considers that basing the calculation on a 4% value is a reasonable starting point, and fishers should consider the implementation of practices that reduce the level of mortality present in the fishery. Some fishing groups may be able to provide a better estimate of the level of fishing-related mortality present in the stock over time, should they monitor their use of the resource.

208 MFish is aware that a range of representative commercial fishers involved in the northern grey mullet, flatfish and rig fisheries met in October 2004 to consider the adoption of a Code of Practice for set netting. MFish considers that adoption of some of the measures in the Code of Practice are likely to contribute to a reduction in other sources of fishing-related mortality.

Total Allowable Commercial Catch

Submissions

209 **NZRFC** notes that the average commercial catch over the last five years is 801.2 tonnes, and this needs to be reduced if this fishery is to be rebuilt above B_{MSY}. NZRFC considers that Option 3c in the IPP is the best of the options presented, providing a TACC of 655 tonnes. Although, NZRFC states that none of the proposals in the IPP will address the problems within the fishery.

210 **Option4** supports the setting of a TACC at 655 tonnes, as proposed in Option 3c of the IPP.

211 The **Kaipara study group** recommends that a TACC of 600 tonnes should be implemented.

212 The **Muriwai Sports Fishing Club Inc.** submits that the TACCs set for the fishery have led to a situation where commercial fishers have been able to intensively fish the

stock, and some effective constraint on commercial activity would better assist in rebuilding the fishery. The club believes that it is now time for commercial interests to shoulder their share, as they have gained socially and financially through their activities. The club considers the commercial sector should pay for their gain, and the recreational sector's pain. The club supports the setting of a TACC at 655 tonnes, as proposed in Option 3c of the IPP.

213 **Forest & Bird and ECO** supports setting a TACC of 655 tonnes in line with Option 3c.

214 **Northern Inshore** notes that management options proposed in the IPP are based on a set of unvalidated "allowances" for non-commercial catches where it is acknowledged that no attempt will be made to ensure that these "allowances" are enforced. The company believes that varying these "allowances" becomes a process by which the TACCs are disproportionately reduced.

215 **SeaFIC** makes some specific comments on the economic analysis for FLA 1 and SPO 1 stocks, and notes that similar comments apply to GMU 1. In general terms, these comments are as follows:

- It may be appropriate to evaluate short-term forgone revenues to the commercial fishery based on a comparison of the value of current catches and the proposed TACC, using fish and ACE sales information;
- Constraining commercial catch may come at the expense of the New Zealand seafood consumer and reduce overall net benefits to the nation;
- If the TACC is reduced and becomes constraining, the deemed value should be re-evaluated to ensure that it is still providing incentives to acquire ACE;
- The economic impact of a TACC reduction should consider the present value of any reduction, not just the annual value of forgone landings (ie, port price). Any analysis should consider consumer surplus and potentially multiplier effects;
- It is incorrect to state that there is no opportunity cost from a reduction in the TACC if commercial catches were below the proposed TAC. Various factors such as an increase in recruitment or a change in price could lead to an increase in catches that might be constrained by a reduced TACC;
- Port prices or ACE prices may not reflect true market values. The sale of fish to the processor, and ACE to the commercial fisher, are typically simultaneous transactions. ACE values do not necessarily fully reflect fishery rents and port prices would not underestimate the landed value of the fish.

216 Northern Inshore welcomes the introduction into sustainability considerations of economic impact analysis for any proposed reductions. However, it supports the comments in the SeaFIC submission that the current approach is inadequate for decision-making. Northern Inshore supports SeaFIC's proposition for a joint working group to assess economic impact of TACC adjustments.

217 Northern Inshore believes MFish have ignored the cumulative effect of reductions on set net fisheries and associated quota share owners in the northern set net fishery who target grey mullet, rig and flatfish as a portfolio of species.

218 **Sanford** opposes any reduction to the TACC based on the evidence provided in the IPP. Sanford submits that the status quo should occur until further robust scientific research is available, rather than anecdotal.

MFish discussion

219 MFish notes that when varying a TACC for any stock, you are required to have regard to the TAC and allow for Maori customary non-commercial fishing interests, recreational interests, and all other mortality to the stock caused by fishing. These matters are canvassed in the preceding sections of this Final Advice Paper, in addition to the IPP.

220 MFish acknowledges that setting the TACC at a level where commercial catch is further constrained will assist in reducing the potential risk associated with current commercial fishing activities that are approaching the existing TACC for the first time (assuming that non-commercial GMU 1 catch has not increased significantly in recent years). MFish does not agree with Northern Inshore that non-commercial catches are freely adjusted at the expense of the TACC made available to commercial fishers.

221 MFish has noted that there are measures in place to constrain recreational catch, and enforcement activity is directed to ensuring that such measures are compiled with. MFish acknowledges that the estimates of non-commercial catch are not accurate, and it will take some time for these to be improved. With better estimates of recreational catch, and the monitoring of that catch against the relevant allowance, appropriate action can be taken to ensure that sustainability objectives are not compromised. In addition, with improved information on non-commercial catch, it will be a lot clearer to fishery interests if future proposals might involve a non-proportional allocation of consequence.

222 MFish notes the view of Sanford that it would like to see management action taken on more robust scientific research. However, representatives from the fishing industry have had difficulties supporting GMU 1 research initiatives in the past.

223 SeaFIC made various comments about how the IPP assessed the economic impacts of any TACC reduction. MFish accepts that it lacks information to fully quantify these impacts. Port price and ACE market price information is the best information available to MFish. During the consultation process, industry does have the opportunity to provide additional information to supplement these sources. MFish also notes that it did suggest in the IPP that the GMU 1 deemed value be considered for review in two to three years time (paragraph 97).

224 Potential foregone earnings for quota holders can also be calculated (Table 4). Reducing the TACC would reduce the amount of ACE each quota owner would receive, potentially reducing profits from ACE sales. This figure assumes that quota holders sell all ACE generated from quota holdings.

Table 4: **Potential foregone earnings (rounded to nearest tonne) for GMU 1 quota shareholders for each of the remaining TACC options (other than the status quo option).**

Option	TACC (t)	TACC reduction (t)	Foregone ACE value*
2a	831	94	$47 000
2b	811	114	$ 57 000
2c	711	214	$107 000
3a	784	141	$70 500
3b	754	171	$ 85 500
3c	654	271	$135 500

* Potential loss to quota holders because each share is equivalent to a smaller amount of ACE. Based on a 90th percentile value of $0.50 per kg.

225 SeaFIC submits that an appropriate economic analysis would examine the outcomes for commercial fishers of changes in total revenue resulting from changes to the TACC under alternative options. This type of analysis is beyond the scope of the economic information MFish holds. MFish welcomes the opportunity to work with industry to develop better ways of determining potential costs to industry of any TACC adjustments. MFish would also be interested in whether the industry had any ideas about how it could measure potential benefits from any TACC adjustments (eg, reduction of costs associated with improving catch rates under lower TACC options).

226 MFish notes that the cumulative effect of potentially reducing TACCs for 'set net' fisheries through the current review process may be varied, and dependent on the TACCs actually adopted. The effect will depend on the dependence of the commercial fisher to the various set net fisheries. MFish notes that the TACC options proposed for the FLA 1 stock are based on average commercial catch over periods of 15 or 10 years, and therefore do not represent a significant change in recent fishing behaviour. Accordingly, the impacts of reductions to a TACC in the FLA 1 stock on set netters in the GMU 1 stock are unlikely to be significant. However, commercial fishers may not be able to offset any reduced fishing opportunity in the GMU 1 stock by fishing more in the FLA 1 or perhaps other related 'set net' stocks (eg, SPO 1), should a change to the TACC be made.

Environmental Considerations

Submissions

227 **Mr Yardley** has observed significant changes in land use that have affected the health of the mudflats through run-off and siltation. The resultant growth in algae may occasionally smother the feeding grounds for both grey mullet and flatfish. Mr Yardley observes that algal growth has become more prevalent in recent years, and that an infestation of Asian date mussel has changed the shape and drainage of mudflats.

228 **Sanford** has concerns about the environmental health of the northern harbours, and submits that land based point and non-point discharges to these estuaries could possibly be affecting marine life and habitat. Sanford considers that these impacts

may be contributing to localised area depletion, which is unrelated to commercial fishing.

MFish discussion

229 MFish acknowledges that environmental factors may play a part in the health of harbour fishstocks including grey mullet. Management of environmental impacts not related to fishing is outside the scope of the Fisheries Act. It is primarily the responsibility of territorial authorities and the Ministry for the Environment. Because MFish's management responses are limited in this area, MFish has in the past done limited research on environmental impacts on fishstocks. Some research is done through MFish's biodiversity fund. MFish is aware that research providers including the National Institute of Water and Atmospheric Research Ltd are doing research in this field. MFish will monitor the outcomes of such research.

230 Sanford suggests that land based discharges, rather than commercial fishing, may be contributing to localised area depletion of marine life and habitat. Regardless of the cause, the effect needs to be managed. Should a fishery decline, appropriate measures need to be implemented to ensure that the diminished resource is not further affected.

231 Undertaking environmental research to better attribute the causes affecting the distribution and abundance of fishstocks may facilitate discussion of where management initiatives can be taken. Such an initiative might be to advocate the concerns, and the research backing it up, to those parties responsible for causing adverse changes to the aquatic environment.

232 MFish notes that the environmental principles in s 9 of the Act must be taken into account when considering management measures for the GMU 1 stock. Adjusting a TAC and allowances may have implications for associated and dependent species, as well as biological diversity of the aquatic environment.

233 MFish has specifically identified in the IPP that separate more focused measures may be needed to ensure the long-term viability of Maui's dolphin, if the current measures are not adequate. MFish does not consider that habitat of particular significance for fisheries management will be affected as a result of an adjustment in TAC and allowances for the GMU 1 stock.

Other Management Issues

Submissions

In-season adjustment to TACC

234 The **Kaipara study group** would like to see the GMU 1 stock added to the Second Schedule of the Act. The Kaipara study group consider that in-season adjustments to the TACC should be possible when recruitment surveys or CPUE analyses demonstrate that there is sufficient abundance to support a greater take.

Size of Quota Management Area

235 The **NZRFC, option4, Muriwai Sports Fishing Club, Forest & Bird and ECO, TRAION,** and **the Kaipara study group** consider the existing QMA for GMU 1 is too large.

236 The **NZRFC** notes that the size of the QMA allows commercial fishers to move to where the fishing is good only to deplete this area and move onto the next, thus never giving the local fisher the chance to enjoy an improved fishery. NZRFC agrees with the submission from Option4 that recommends subdivision of the QMA into sustainable areas for effective management.

237 **option4** and **TRAION** consider the QMA for GMU 1 is far too large for effective management of the fishery on a local scale. option4 and TRAION consider that the QMA needs to be subdivided and sustainable catch limits allocated to contentious areas so that the fishery can be rebuilt, and so that non-commercial fishing can be properly allowed for.

238 The **Kaipara study group** observes the IPP provides no analysis about whether the current QMA for the GMU 1 stock is simply too large to give practical effect to the purpose of the Act. The Kaipara study group is concerned that TACC reductions for GMU 1 will not effectively address depletion problems in the Kaipara Harbour. The Kaipara study group has an expectation that consideration of an appropriate QMA would be undertaken through the review of sustainability measures and other management controls process. The Kaipara study group recommends that as a minimum the GMU 1 stock should be bisected into a west and east coast fishery.

239 The **Muriwai Sports Fishing Club Inc.** believes that the east and west coasts should be separate QMAs, and then significant harbours (eg, Kaipara, Manukau) and other fishing areas should have their own extraction limits. The club considers that without individual area extraction limits, commercial fishers are able to move around the top half of the North Island, quickly overfishing and depleting one harbour, then moving onto the next. The effect of the bulk extraction of these mobile commercial fishers is to deplete local areas of concern to many communities dependent on regular catch for sustenance.

240 **Forest & Bird and ECO** submits that the GMU 1 fishery should be managed in two units to reflect the two substocks: east coast and west coast. These environmental representatives also believe that splitting the TACC into two or three quota areas (East Coast, West Coast and Kaipara) should be investigated.

241 **Northern Inshore** fundamentally opposes the proposition that the GMU 1 stock consists of two sub-stocks and that there is merit in subdivision of the QMA. The company contends that numerous stocks in the QMS have recognised sub-area / divisions or sub-stock boundaries. Examples cited include HOK 1, ORH 3B, SNA 1 and SKI 1.

242 The company observes that a simple split of the GMU 1 stock into east and west stocks may not address the issues raised in the IPP in paragraph 153. The premise noted there is that, while commercial catch has remained stable in more recent years, the trends in commercial CPUE have differed between the east and west coasts. In

addition, the company notes that there are differing trends within the east and west coast "stocks" and that Watson et al. 2005 recommended separate consideration of the individual sub-areas.

243 Northern Inshore believes that the QMS satisfies primary utilisation objectives. The company observes that commercial fishers can freely access a stock on the basis of the harvesting rights defined by ACE. Benefits of the system include the flexibility for commercial fishers to plan the structure of their activities and move within QMAs to fish where most economically beneficial. On this basis Northern Inshore support larger rather than smaller QMAs. Further, the company advises that the evidence indicates that self-regulation of commercial fishing effort is consistent with the intent of the QMS to create economic efficiency.

244 **Sanford** strongly opposes subdividing QMAs to address local depletion concerns. Sanford notes that the more a species is divided into separate stocks, the less confident it is that the aggregate assessment reflects the situation for individual sub-stocks. Sanford also advises that a further concern is whether the sub-area reflects the status of a stock as a whole.

245 Sanford considers the QMS provides (commercial) fishers the ability to move freely within a large QMA, as fish populations move. The flexibility allows for maximum return from the quota owned, whilst ensuring that catch limits are not exceeded. Sanford submits that the smaller the QMA, the more difficult it becomes to manage the stock and catch the fish. Sanford notes that fish are transient, and their numbers fluctuate over time.

Soak time

246 **NZRFC, Option4,** and **Muriwai Sports Fishing Club** submit that the set net soak time should be reduced.

247 **option4** considers that the current maximum soak time for set netting at 18 hours is far too long, particularly in areas where sea lice are present. option4 considers that wastage can be reduced, and productivity increased, if shorter soak times can be applied to all set netting by all sectors. NZRFC suggests a maximum time of 6 hours on the basis of the change in tide.

248 The **Muriwai Sports Fishing Club Inc.** believes that there should be a reduction in the soak time for nets used by commercial fishers only. The club considers that this would bring about an increase in the biomass and availability of grey mullet to recreational fishers. The club notes that set netting is a wasteful method when nets are not cleared and checked regularly. Reducing wastage could result in the reduction of relatively high allowances for other sources of fishing related mortality, and/or increased financial return per fish caught. The club submits that nets should not be left for more than one tidal cycle, and in many instances a full tidal cycle is too long.

249 **Mr Yardley** contends that the misuse of 'superfine' monofilament nets and the current setting practices, relative to the laws on the duration of time that nets may be left set (ie, soak time), has lead to considerable wastage of both juvenile and adult fish. The effects of monofilament mesh are worse in the summer when juvenile fish are more prevalent.

Measures for the recreational sector

250 **NZRFC, option4** and the **Muriwai Sports Fishing Club Inc** submit that no changes should be made to non-commercial bag limits, size limits or gear restrictions in the GMU 1 stock. The Muriwai Sports Fishing Club advises that the recreational bag limit is seldom taken.

251 **Northern Inshore** submits that MFish is not considering introducing management controls for the recreational sector, despite the argument that recreational take has increased. The IPP argues that MFish does not have the capacity to both educate and enforce additional measures required at short notice. Northern Inshore believes that this is an abdication of the Minister's responsibilities.

252 The company queries how the Minister would know whether it is the expansion of recreational effort that is a major contributory cause to the perceived sustainability problem. If sustainability measures are proposed for a fishery, then all sectors should be included in the proposed management measures.

253 Northern Inshore proposes that grey mullet should be included in the mixed finfish bag limit of 20 fish and that recreational fishers must manage their effort to avoid the excess catch, in the absence of any work by MFish to propose input controls such as net lengths, mesh sizes or prohibition of set net method for grey mullet.

254 Northern Inshore supports the use of non-regulatory tools to address proven local sustainability and utilisation issues such as codes of practice or voluntary agreements. In addition, the company supports the use of local controls such as differential bag limits, fishing restrictions, fish sizes etc to address local depletion issues.

255 The company also considers that MFish have invoked budget constraints as the basis for failing to implement controls on the recreational sector. Further, it suggests that the IPP provides no clarity on the active management and monitoring of non-commercial catch.

Measures for the commercial sector

256 **option4, NZRFC**, **TRAION,** and **Muriwai Sports Fishing Club Inc** submit that the mesh size for set and ring netting should be increased for commercial fishers only. option4 and TRAION believe this measure would:

- Increase the biomass of the fishery;
- Increase the availability of grey mullet to non-commercial fishers;
- Increase commercial yield per recruit in the fishery;
- Reduce the capture and mortality of small grey mullet; and
- Significantly reduce the mortality of other juvenile fish found in harbours (eg, snapper, trevally, rig, and gurnard).

257 The **Muriwai Sports Fishing Club Inc.** notes that as grey mullet are relatively fast growing, escapees would quickly attain a size that could be retained.

258 **TRAION** notes that set netting and ring netting are the main commercial fishing methods used in harbours for grey mullet.

259 **Northern Inshore** supports the use of non-regulatory tools to address proven local sustainability and utilisation issues such as codes of practice or voluntary agreements. In addition, the company supports the use of local controls such as differential bag limits, fishing restrictions, fish sizes etc to address local depletion issues.

The Kaipara study group's 'fisheries management strategy for the Kaipara Harbour'

260 The **Kaipara study group** is concerned the IPP does not refer to the 'Kaipara Harbour Strategy', despite going through extensive consultation with all stakeholders, including the local community. The Kaipara study group notes that their strategy was formally presented to the Minister over a year ago. The Kaipara Harbour Strategy proposes a number of management measures that the Kaipara study group wish to see considered as part of the current review process.

Future work

Research

261 **TRAION** observes that the status and health of fisheries in general need to be managed more effectively. TRAION suggests that this would be improved by obtaining more robust stock assessment information for discrete fisheries. Similarly, TRAION notes that there is a lack of information on the impacts of fishing on associated and dependent species, biodiversity, and specifically impacts on the cultural, social, environmental and ecological values of Ngapuhi.

262 **Northern Inshore** observes that MFish propose the need for research work to be given greater emphasis in the future, including shed sampling to characterise commercial catch. Northern Inshore wishes to record its current dissatisfaction with the MFish managed research process that recently resulted in the Inshore Stock Assessment Working Group rejecting existing shed sampling work to characterize commercial catch due to poor sample design resulting in a lack of catch representation.

263 The company supports on-going monitoring and review of the GMU 1 stock. Although deficiencies in the available data for management of the GMU 1 stock are recognised, the company considers that the IPP does not propose future management initiatives to address these gaps. The company submits that the IPP does not propose research to investigate if the allegations of localised depletion are correct. The company also suggests that MFish needs to consider how best to gain information on the health of the Manukau Harbour.

264 Northern Inshore believe that the effect of separating ring netting from set netting catch effort information needs to be thoroughly investigated so that these changes can be included in the analysis of CPUE indices.

Compliance

265 **Northern Inshore** notes that the IPP recognises several sources of illegal catch that remove a significant amount of catch from the fishery on an annual basis. The company suggests that a detailed compliance plan needs to be developed for harbour fisheries to support the sustainability measures for this stock.

Engagement with communities to address management concerns

266 **Forest & Bird and ECO** notes that the proposed future management discussion fails to adequately reflect community concerns about the state and management of the fishery. These environmental representatives consider that MFish needs to engage with communities to actively consider the use of localised management tools to address community concerns for more effective control of this shared fishery that includes significant customary usage and values.

267 Environmental representatives understand that there has been an increase in the use of ring nets in the entrance to the Kaipara Harbour by commercial fishers, and this change in methods is of concern. Environmental representatives believe that this has affected the distribution of grey mullet in the reaches of the harbour and is a concern to marae around the Kaipara, as fish are not getting up into the many inlets that local people rely on for access.

Potential impacts on seabirds and dolphins

268 **Forest & Bird and ECO** advise that any code of practice for the GMU 1 stock should be in line with the National Plan of Action on seabirds as this is mainly a set net fishery. These environmental representatives consider that the effect of this fishery on Maui dolphins needs to be reviewed in line with current information on movement of dolphins into 'East Coast Harbours'.

MFish discussion

General observations

269 Many of the other issues that submitters raised have a scope outside of this Final Advice Paper. Changes to the TAC alone are unlikely to address all the problems that some stakeholders are raising. Setting an appropriate TAC is a reasonable first step, however you may elect to consider other avenues before doing this. Other changes may be needed over time, including some measures that are more closely focussed on local area problems.

270 MFish acknowledges the development of the Kaipara Harbour Strategy. However, it is noted that the primary aim of the current initiative is to review the TACs for three stocks, including GMU 1. The intention was not to implement a fisheries management strategy for the Kaipara arbour in the course of the current sustainability measures review process.

271 MFish has signalled a desire to adopt an objective-based approach to fisheries management in the future. This approach should allow fishery interests to better specify their desired outcomes for the fishery. These outcomes can then be better integrated into MFish operational planning.

272 MFish also notes some commercial fishers have recently been discussing some of these issues, including soak time and mesh size, as part of developing a code of practice for the grey mullet, rig, and flounder fisheries. MFish considers that these initiatives should be tested over the short to medium term, with a view to determining their effectiveness and practicality, before considering an amendment to the current regulated measure.

273 However, MFish notes that some code of practice issues were raised during the deliberations of the Set Net Task Force in 1991. The Set Net Task Force also developed a code of practice in 1990 for set netting in general within the Auckland Fishery Management Area. Some measures were regulated, and other recommendations were left open for further consultation (eg, reviewing the need to allow stalling of set nets in the Kaipara Harbour).

Size of quota management area

274 The definition of a stock in the Act is 'one or more species of fish that are treated as a unit for the purposes of fisheries management'. The purposes of fisheries management can be drawn from the purpose of the Act. Importantly, part of the Act's purpose is to enable people to provide for their social, economic and cultural well–being. MFish considers that implementation of refined administrative boundaries may provide both costs and benefits to fishery interests that need to be carefully considered.

275 MFish notes that most stocks in northern New Zealand have QMAs that bisect the west and east coasts at North Cape. Typically there is likely to be limited mixing of populations of fish between these biogeographically distinct areas.

276 MFish also recognises that within stocks for various species, there are component sub–stocks that have varying degrees of mixing. Other than snapper, stocks cited as examples by Northern Inshore are all deepwater fisheries, and are not shared fisheries like GMU 1. Sub-dividing an existing stock boundary need not be undertaken to the level of a sub-stock, but a new QMA may include several where these are appropriately managed together.

277 MFish is mindful of the economic efficiencies that are afforded to commercial fishers when they are able to fish over a larger rather than smaller QMA. However, MFish considers that a QMA based on the west coast between North Cape and Tirua Point is likely to provide considerable scope to undertake commercial fishing activities without undue cost. MFish believes that there may be benefits to commercial fishers that have yet to be considered. One of those is improved participation and management by fishery interests, particularly in a fishery that has many participants that may change regularly.

278 MFish acknowledges that non-commercial interests and some commercial interests may consider the size of the current QMA impractical for the purposes of management. However, it may be possible to avoid some of the issues that are facing some fishery interests through the use of other tools in the Act, or through codes of practice or voluntary agreements. Some of these issues may not be addressed through a QMA subdivision proposal under s 25 of the Act.

Measures for the recreational sector

279 MFish does not necessarily consider that recreational catch has increased. The option for an alternative allowance from that currently in place recognises that the estimates of recreational GMU 1 catch are unreliable and uncertain. MFish considers that recreational catch of GMU 1 is most likely to be in the range of 100-150 tonnes, and that this level of annual catch is likely to have been about the same for more than a decade. Consequently, MFish does not see the need to implement changes to recreational fishing rules to further constrain recreational catch.

280 Grey mullet were considered for inclusion in the mixed finfish bag limit when it was introduced in September 1993. The Minister at the time did not include them because of the likelihood that more than 20 grey mullet could be taken in one set. Surplus grey mullet caught may not survive if returned to the water.

281 The recreational bag limit for grey mullet is 30 per person per day. MFish notes that SeaFIC and Northern Inshore err in their submissions by stating that no bag limit exists, and there would then be little reason for customary fishers to obtain a regulation 27 authorisation, or use the Fisheries (Kaimoana Customary Fishing) Regulations 1998.

282 Northern Inshore notes that it supports use of differential bag limits for areas suffering from local depletion. Differential bag limits may be more difficult to apply to some finfish species that are more mobile. This may raise issues about the effectiveness of some measures implemented at a local or regional scale, and their longevity. There may be potential for compliance concerns if such controls need to be adjusted too regularly.

283 Collection of good quality information to support management initiatives will take time and resources. MFish does not accept that it has failed to implement measures on the recreational sector because of budget constraints. MFish continues to prioritise fisheries in need of management review, and address risks as they arise. In addition, MFish observes that it has not always had the support of fishery interests in pursuing further information of use to the management of the GMU 1 stock.

Future research

284 MFish welcomes the support of some submitters for further research. MFish notes the concerns from Northern Inshore about shortcomings it believes are apparent in past shed sampling work. MFish encourages industry representatives to constructively engage with MFish and research providers in ensuring that research methodologies are robust.

285 MFish considers that the collection of the ancillary information required to undertake a robust stock assessment for the GMU 1 stock cannot be deferred indefinitely. MFish will be seeking a more definite statement of research activities for the GMU 1 stock through the Medium Term Research Plan. MFish would welcome input from a broad and representative range of fishery interests in that task.

286 MFish would welcome input from TRAION on specific opportunities for further research that relate to the impacts of grey mullet fishing that it has identified. These ideas can be discussed at the annual Research Planning Group meeting for Inshore

Finfish normally convened in August or September. Alternatively, any research proposals can be forwarded to the convenor in order that they can be tabled at such meetings.

287 MFish will also consider avenues to better assess estimates of non-commercial catch, and the characterisation of that use. MFish invites Northern Inshore to elaborate on a research idea to assess the relative health of the Manukau Harbour as it relates to fisheries values.

Conclusion

288 MFish considers that the scientific information on stock status of grey mullet is uncertain. There is no information to indicate whether the current stock size is above or below the size that can produce the MSY. A decline in CPUE has been observed in some areas of the QMA, however whether this decline represents a sustainability concern or localized depletion of grey mullet is not known. Recreational and commercial fishers are at odds over the status of the stock. Recreational fishers (and some commercial fishers) suggest there has been a decline in abundance, whereas other commercial fishers dispute this view.

289 As the current biomass relative to B_{MSY} is not known, nor is there reliable estimates of sustainable yield, it is not known whether these commercial CPUE trends compel you to act immediately.

290 New information assessing CPUE data from the fishery could be available for use in management decisions in 2007–08. This information could help inform sustainability risk to the stock.

291 The decision that you make for the 2005–06 fishing year should be based on the degree of risk to the stock you consider acceptable. MFish does not consider the current degree of sustainability risk to the stock to be high. However there is uncertainty in information on stock status, and the fishery is important to all stakeholders, accordingly it would be reasonable for you to take a risk adverse approach based on declining CPUE in some areas of the stock and reduce the TAC. However, MFish note that there is no information on which to base a sustainable catch limit in accordance with s 13. As such the benefits of an adjustment to the TAC in preventing a decline in biomass, if one is occurring, or managing localised depletion issues, are unknown. In such circumstances MFish believe you should carefully consider the impacts of management action on users of the resource and the weight placed on that information when the benefits of a reduction to the TAC are uncertain. Socio-economic information on the impacts of the TAC reductions is outlined in detail in the allowance section of the paper.

292 Three options were provided as the basis for determining a TAC, representing a reduction on the estimated total removals from the stock by 5, 10, and 15%. The total estimated removals from the stock are the sum of the existing TAC and an estimate of other sources of fishing-related mortality. The 5% reduction has been discounted as a TAC option in the Final Advice Paper. This is because it is so close to the existing TAC, and secondly, because a status quo option has been advanced in the Final Advice Paper. The options identified by MFish are therefore to retain the existing

TAC (*status quo*), adopt a TAC of 1 053 tonnes (10% reduction – Option 2), or adopt a TAC of 994 tonnes (15% reduction – Option 3).

293 MFish recommends that an allowance for other sources of fishing-related mortality is made equivalent to 4% of the TAC options proposed. An allowance for this form of mortality has not been made before. MFish have recommended allowances for customary fishing consistent with the allowances recommended for recreational fishing, but do not support a reduction in the customary allowance below 100 tonnes.

294 There is considerable uncertainty about the estimates of recreational catch, and recommendations for a recreational allowance of either 100 or 150 tonnes are both likely to represent recent recreational catch in the stock. While the relative share of the TACC to the TAC can be portrayed as being changed, an allowance of 150 tonnes does not represent a tacit re-allocation of commercial harvesting rights, as some commercial submitters suggest. Alternatively, continuing with a 100 tonne allowance may be appropriate until better research information on the extent of recreational catch is available.

295 You are free to choose a proportional or non-proportional option for allocation of the TAC. The generic section of the FAP discusses the costs and benefits of each approach generically. MFish has a policy preference for proportional adjustment to the TAC in shared fisheries, all other things being equal. The socio-economic impact of various allocation options is outlined in the allowance section.

296 MFish notes that you will need to weigh up the various social, cultural and economic considerations of a decision on both the TAC for the stock, and the allowances and TACC, and all the other statutory considerations. For example, there were no submissions expressly pointing to the matters covered by s 11(2) or s 11(2A) of the Act, and how such considerations might affect the varying of a sustainability measure. These statutory obligations were canvassed in the IPP. However, MFish has reinforced its existing position in the Final Advice Paper that further research on the GMU 1 stock will be required over the medium term. Submitters acknowledged the need for more research, and the Medium Term Research Plan for the GMU 1 will need to reflect that.

297 In addition, while reviewing the catch limit proposals, other management initiatives were identified by submitters. You may wish to consider these, as appropriate, in light of the decisions required of you when reviewing catch limits and allowances. You may determine to explore some of these options in preference to adjusting the TAC and allowances at this time.

Final Recommendations

298 MFish recommends that you:

EITHER

a) **Agree** to retain the existing TAC and allowances for GMU 1;

OR

b) **Agree** to Option 2a and set a TAC of 1 053 tonnes for GMU 1 and within that TAC set:

i) a customary allowance of 100 tonnes;

ii) a recreational allowance of 80 tonnes;

iii) an allowance of 42 tonnes for other sources of fishing-related mortality; and

iv) a TACC of 831 tonnes.

OR

c) **Agree** to Option 2b and set a TAC of 1 053 tonnes for GMU 1 and within that TAC set:

i) a customary allowance of 100 tonnes;

ii) a recreational allowance of 100 tonnes;

iii) an allowance of 42 tonnes for other sources of fishing-related mortality; and

iv) a TACC of 811 tonnes.

OR

d) **Agree** to Option 2c and set a TAC of 1 053 tonnes for GMU 1 and within that TAC set:

i) a customary allowance of 150 tonnes;

ii) a recreational allowance of 150 tonnes;

iii) an allowance of 42 tonnes for other sources of fishing-related mortality; and

iv) a TACC of 711 tonnes.

OR

e) **Agree** to Option 3a and set a TAC of 994 tonnes for GMU 1 and within that TAC set:

i) a customary allowance of 100 tonnes;

ii) a recreational allowance of 70 tonnes;

iii) an allowance of 40 tonnes for other sources of fishing-related mortality; and

iv) a TACC of 784 tonnes.

OR

f) **Agree** to Option 3b and set a TAC of 994 tonnes for GMU 1 and within that TAC set:

i) a customary allowance of 100 tonnes;

ii) a recreational allowance of 100 tonnes;

iii) an allowance of 40 tonnes for other sources of fishing-related mortality; and

iv) a TACC of 754 tonnes.

OR

g) **Agree** to Option 3c set a TAC of 994 tonnes for GMU 1 and within that TAC set:

i) a customary allowance of 150 tonnes;

ii) a recreational allowance of 150 tonnes;

iii) an allowance of 40 tonnes for other sources of fishing-related mortality; and

iv) a TACC of 654 tonnes.