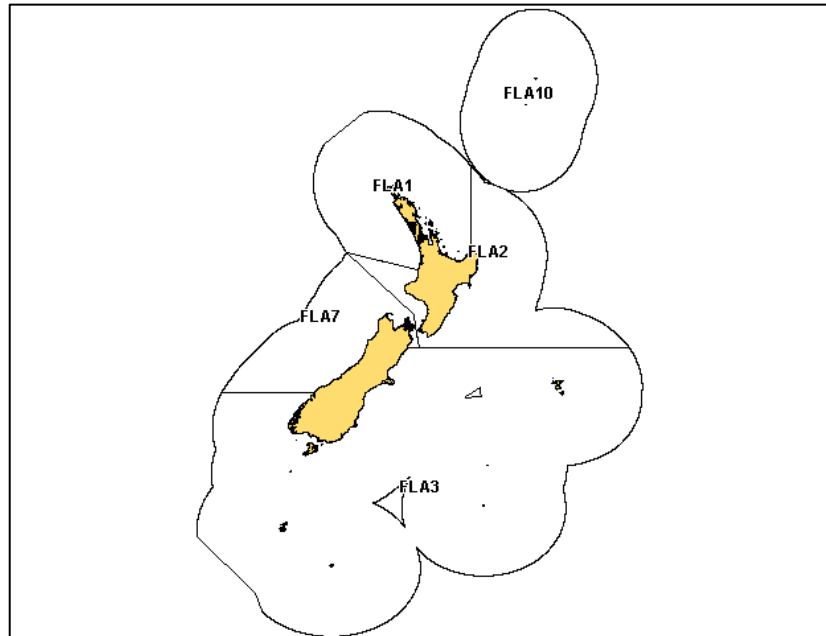


FLATFISH (FLA 3)

Figure 1: Location of boundaries of the flatfish (FLA) Quota Management Areas.



Executive Summary

- 1 The key issues to consider for flatfish (FLA 3) are as follows:
 - a) Anecdotal information from commercial and recreational fishers suggests current catches are not sustainable. Some commercial fishers consider that intensive fishing effort in recent years is affecting the sustainability of FLA 3. Some recreational fishers consider FLA 3 abundance is so low that they are effectively being denied access.
 - b) Commercial fishers are normally unable to harvest the Total Allowable Commercial Catch (TACC) so there is typically more Annual Catch Entitlement (ACE) available than there is catch. This disparity creates incentives to overcapitalise catching capacity and race for catch – inefficiencies characteristic of open access fisheries.
 - c) The Minister of Fisheries (the Minister) has asked the Ministry of Fisheries (MFish) to review FLA 3 catch limits in response to these sustainability and utilisation problems.
 - d) MFish cannot yet determine the status of FLA 3 biomass relative to the biomass that would sustain the maximum sustainable yield (B_{MSY}). The best available information suggests FLA 3 abundance is declining and that constant catch at the TACC is probably not attainable or sustainable.
 - e) MFish proposes four Total Allowable Catch (TAC) options including, three options with lower TACCs. The first option reflects status quo management.

- f) Flatfish abundance is naturally variable (in relation to environmental variables) and some commercial fishers are concerned that a lower TACC will limit their ability to catch more fish in years of high abundance. MFish notes that FLA 3 is listed on the Second Schedule of the Fisheries Act 1996, allowing the Minister to increase the TAC *during* the fishing year. There is no rationale for maintaining a high TACC to cover years of high abundance.
- g) Lower TACCs will have social and economic impacts on commercial fishers, although MFish notes that, with the exception of option 4, the TACC options reflect current catches. In addition, impacts need to be balanced against the longer term sustainability and utilisation benefits associated with shorter term TACC reductions.

Summary of Options

2 The current TACC for FLA 3 is 2 681 tonnes. A TAC and other allowances have not yet been set for FLA 3. All options propose to base the TAC, TACC, and allowances on recent catches and/or historic allocations.

3 The following management measures are proposed for the FLA 3 fishery for the 2007-08 fishing year:

EITHER

a) Option 1 - set a TAC of 2 893 tonnes for FLA 3 and within that TAC set:

- i) a customary allowance of 5 tonnes;
- ii) a recreational allowance of 150 tonnes;
- iii) an allowance of 57 tonnes for other sources of fishing-related mortality; and
- iv) a TACC of 2 681 tonnes (the existing TACC).

OR

b) Option 2 - set a TAC of 1 974 tonnes for FLA 3 and within that TAC set:

- i) a customary allowance of 5 tonnes;
- ii) a recreational allowance of 150 tonnes;
- iii) an allowance of 39 tonnes for other sources of fishing-related mortality; and
- iv) a TACC of 1 780 tonnes.

OR

c) Option 3 - set a TAC of 1 617 tonnes for FLA 3 and within that TAC set:

- i) a customary allowance of 5 tonnes;
- ii) a recreational allowance of 150 tonnes;
- iii) an allowance of 32 tonnes for other sources of fishing-related mortality; and

- iv) a TACC of 1 430 tonnes.
- d) Option 4 - set a TAC of 980 tonnes for FLA 3 and within that TAC set:
 - i) a customary allowance of 5 tonnes;
 - ii) a recreational allowance of 150 tonnes;
 - iii) an allowance of 20 tonnes for other sources of fishing-related mortality; and
 - iv) a TACC of 805 tonnes.

4 The proposed TAC, TACC, and allowances are set out in Table 1.

Table 1: The proposed TAC (tonnes), TACC (tonnes) and allowances for FLA 3 for the 2007-08 fishing year

	Proposed TAC (tonnes)	Customary allowance (tonnes)	Recreational allowance (tonnes)	<i>Other sources of fishing- related mortality (tonnes)</i>	Proposed TACC (tonnes)
Option 1 (TAC based on present TACC)	2 893	5	150	57	2 681
Option 2 (TAC based on recent catch)	1 974	5	150	39	1 780
Option 3 (TAC based on the last 5 years catch)	1 617	5	150	32	1 430
Option 4 (TAC based on estimate of MCY)	980	5	150	20	805

Rationale for Management Options

- 5 MFish proposes to set the TAC for FLA 3 using s 13 of the Act.
- 6 Most stocks in the Quota Management System (QMS) are managed under s 13. Section 14 provides an alternative means for setting a TAC under certain circumstances where it would better meet the purpose of the Act. MFish considers that s 14 does not apply for FLA 3 because:
- a) it is possible to estimate the MSY for the species;
 - b) a catch limit for New Zealand has not been determined as part of an international agreement;
 - c) the stock is not managed on a rotational or enhanced basis; and
 - d) the stock does not include one or more highly migratory species.
- 7 The Act specifies a requirement to set a TAC that maintains or moves FLA 3 towards a level that can produce the maximum sustainable yield (MSY), having regard to the interdependence of stocks (*ref s 13(2)*). MSY is defined, in relation to any fishstock, as being the greatest yield that can be achieved over time while maintaining the stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock.
- 8 The Minister must set a TAC under s 13 that:
- a) Maintains the stock at or above a level that can produce the MSY; or
 - b) Enables any stock that is currently below a level that can produce the MSY to be restored to a level at, or above, that which can produce the MSY; or
 - c) Enables the level of any stock currently above the MSY to be altered in a way and at a rate that will result in the stock moving towards the MSY.

Stock status

- 9 FLA 3 consists of 8 species of right-eyed flounders and sole managed as one stock complex - lemon sole (*Pelotretis flavilatus*), New Zealand sole (*Peltorhamphus novaezealandiae*), yellowbelly flounder (*Rhombosolea leporina*), sand flounder (*Rhombosolea plebeia*), greenback flounder (*Rhombosolea tapirina*), black flounder (*Rhombosolea retiaria*), turbot (*Colistium nudipinnis*), and brill (*Colistium guntheri*).
- 10 There is little information on whether the FLA 3 stock is at, above, or below the level that can produce the MSY. There is no research information on the abundance of flatfish in FLA 3. Estimates of current and reference biomass are not available for flatfish in FLA 3. Stock assessments for flatfish have been based on estimating MSY in terms of Maximum Constant Yield (MCY)¹. The yield estimates are based on commercial landings. The

¹ MCY was estimated using the equation, $MCY = cY_{av}$ (Method 4). Y_{av} is the reported catch over the period October 1983 to September 1988, and c was set equal to 0.6 based on the estimate of $M = 1.1-1.3$. These estimates of MCY are based on reported landings during a period of decreasing effort and are considered conservative.

management of eight species in one management group has inherent risks. At present, the population dynamics of individual flatfish species is poorly understood.

- 11 Annala et al (2001) estimated the FLA 3 MCY based on the average commercial landings from 1983-84 to 1987-88 (these years reflect stable effort and catches). The FLA 3 MCY only applies to the commercial fishery and is illustrated in Table 2 below.

Table 2: Yield estimates (t) (rounded to the nearest 10 t)

Parameter	Fishstock	Estimate
MCY	FLA 3	980

- 12 Anecdotal information on declining recruitment suggests that flatfish abundance may be declining. The 2006 plenary report noted that: “The sizes of the populations depend heavily on the strength of the recruiting year classes and are therefore highly variable. For this reason, a constant catch at the level of the current TACC is unlikely to be attainable or sustainable, nor would it be likely to allow stocks to move towards a size that would support the MSY.” The current landings and TACC are 40% and 170% respectively above the level that is considered sustainable using yield estimates based on the estimated maximum constant yield.
- 13 Recreational fishers participating in the regional MFish Recreational Fishing Forum are concerned about the sustainability of the current TACC. Forum members state they have stopped fishing for flatfish because of the decreased abundance. Forum members consider the current catch limits are denying them access to FLA 3.
- 14 Some commercial fishers are also of the view that the FLA 3 TACC (2 681 tonnes) is not sustainable. Since 1983, the average landing of FLA 3 has been 1 772 tonnes. They are concerned that the intensive fishing that has taken place in recent years is affecting the sustainability of the stock.
- 15 Customary fishers have only taken 65% of the authorised FLA 3 catch over the last five years. The reasons for this are unknown but may include inability to access sufficient flatfish.

Existing catch limits

- 16 The inclusion of flatfish in the QMS was based partly on the assumption that a TACC would act to decrease competition for catch in poor years. However, current flatfish TACCs do not operate in this way. The original TACC for FLA 3 was set at a high level of 2 681 tonnes, based on 1983 catch levels that were the highest on record, to allow high levels of commercial catch in years of high abundance.² It also accommodated quota appeals from quota holders following inclusion in the QMS. The TACC has not been fully caught since it was set, and it is substantially above the level of current catches.
- 17 FLA 3 is effectively an open access fishery because there is usually more ACE available than can be caught. There is intense competition for flatfish in poor years, both among commercial fishers, and between commercial and recreational fishers, and this accentuates bycatch problems.

² Colman, A. (1985) Flatfish. In: Background papers for the 1985 TAC recommendations. Pp 74-78. N.Z. Ministry of Agriculture and Fisheries (unpublished report held in NIWA library, Wellington).

- 18 Fishers target fishing for flatfish often run out of ACE for associated bycatch species, but use their uncaught flatfish ACE to continue target fishing, regardless of by-catch (which may be dumped or deemed). This is a problem that is associated with many of the inshore multi-species trawl fisheries. The high TACCs set for species like flatfish, whose availability is highly variable, provides an incentive to maximise target catch regardless of how much bycatch ACE is held. Although ACE is not required to go to fishing most fishers prefer to have allocated ACE rather than pay deemed value prices.
- 19 MFish recognises that commercial fishers are not obliged to fully catch their catch entitlements. Various reasons unrelated to abundance of the stock (for example market demand or price) can affect how much flatfish fishers choose to take. However, the existing TACC appears to be artificially high, given that it has never been caught. In addition, even if current commercial catches are not contributing to declining recruitment, MFish considers the possible decline in recruitment needs to be taken into account even if it is purely natural variability.
- 20 Reducing the TACC would reduce the amount of unfished FLA 3 ACE. It will help “close” the current open access characteristics of FLA 3 and provide a framework for fishers to obtain more value from the FLA 3 stock. Options 1 to 3 reflect current catches and will not unduly constrain catches. Option 4 is more conservative and will constrain catch below recent levels.
- 21 MFish notes that it is currently consulting on a proposal to increase the squid TAC (TAC set under s14, and on the Third Schedule of the Act; refer Initial Position Paper with this document). The fishery and biological characteristics of flatfish and squid are sufficiently different to warrant different management approaches. Flatfish is longer lived than squid and, while the abundance of flatfish varies, it does so over longer time periods and at a smaller scale than squid. Flatfish is also a shared fishery and recreational fishers are finding that what was once an abundant and accessible species is now an uncommon catch under current management.

Option 1

- 22 Option 1 proposes a TAC of 2 876 tonnes, with a TACC of 2 681 tonnes. This is, in effect, the status quo TACC with additional allowances based on current catch estimates to create a TAC.

Option 2

- 23 Option 2 proposes a TAC of 1 975 tonnes, including a TACC of 1 780 tonnes. Commercial catch is averaged over 15 years to account for any cyclical changes in flatfish catches over time. For example, commercial catches have peaked twice in the last 20 years, in 1988-89 and between 1995 and 1998 (refer Figure 2). The 15 year period incorporates the years 1995-96 to 1997-98 during which flatfish catches were substantially higher than in other years. Other allowances are as per option 1.

Option 3

- 24 Option 3 sets the TAC at 1 625 tonnes. It uses the same estimates for customary and recreational catch, and other sources of fishing-related mortality as option 2 but sets a lower TACC of 1 430 tonnes. This TACC is calculated from commercial catches over a different period, the average of the last five years 2001-06.

Option 4

25 Option 4 sets the TAC at 980 tonnes. It uses the same estimates for customary and recreational catch, and other sources of fishing-related mortality as option 2 but sets a lower TACC of 785 tonnes. This TAC is calculated from the estimate of MCY³.

Assessment of management options

26 MFish policy is to set a TAC for any stock under review that does not yet have one. MFish considers that setting a TAC and, within it, allowances for commercial and non-commercial fishing, is the best way of ensuring sustainable management of this fishery.

27 MFish does not have information to confirm what is causing recruitment to decline. Rather than fishing pressure, the cause may be environmental or climatic factors. However, the TACC is currently set substantially above the level of commercial catches and may not be attainable. A TAC needs to be set that is more likely to fulfill the obligation to move FLA 3 towards the level that can produce the MSY.

28 The following sources of information have been considered in proposing a TAC for FLA 3:

- Best available information about the status of the stock from 2006 Plenary (including the MCY estimate for FLA 3);
- The existing commercial catch limit; and
- Catch information and assumptions of other sources of fishing-related mortality.

29 Catch information and estimates of other sources of fishing-related mortality are considered the most appropriate basis for setting the TAC.

Proposed TAC options

30 Option 1 is the status quo TACC with additional allowances to make the TAC. Options 2 and 3 propose to base the TAC for FLA 3 on current catches. Option 4 is based on the estimate of MCY

- Option 1 - TAC based on current TACC, plus estimates of recreational and customary catches and other sources of fishing-related mortality based on estimates of current catch (2 893 t);
- Option 2- TAC based on 15-year average of commercial catches, plus estimates of recreational and customary catches and other sources of fishing-related mortality based on estimates of current catch (1 974 t);
- Option 3 - TAC based on average of the last 5 years of commercial catches, plus estimates of recreational and customary catches and other sources of fishing-related mortality based on estimates of current catch (1 617 t); and
- Option 4 –TAC based on MCY estimate, plus estimates of recreational and customary catches and other sources of fishing-related mortality based on estimates

³ MCY was estimated using the equation, $MCY = cY_{av}$ (Method 4). Y_{av} is the reported catch over the period October 1983 to September 1988, and c was set equal to 0.6 based on the estimate of $M = 1.1-1.3$. These estimates of MCY are based on reported landings during a period of decreasing effort and are considered conservative.

of current catch (980 t).

- 31 MFish assesses FLA 3 as a ‘stable’ fishery (rather than a developing fishery). Reported commercial catches have remained relatively constant over an extended period, at around 1 200 to 1 800 tonnes. Peaks occurred in 1988-89 (2 458 tonnes) and 1996-97 (2 573 tonnes).
- 32 The potentially high natural variability of flatfish has been taken into account by providing the four options on which to base the TAC.
- 33 The 2006 Plenary report suggests it is unlikely that a TAC based on the current TACC of 2 681 tonnes (option 1) would move FLA 3 towards a level that would support the MSY, nor will it alleviate the concerns expressed by recreational and some commercial fishers. Option 1 involves the greatest risk to stock sustainability, given that the current stock status of FLA 3 is unknown.
- 34 Option 2 would prevent additional catch or effort in this fishery. It takes into account the uncertainty about the biomass level that will produce the MSY, and the concerns of recreational and some commercial fishers regarding the sustainability of the fishery.
- 35 Option 3 would prevent any additional catch or effort in FLA 3. In some years, catch may be constrained (although the TACC could be increased using the Second Schedule for such years). This option places greater emphasis on historic and recent lower catches and less on the occasional peak years. It also places more weight on the concerns of recreational and some commercial fishers.
- 36 Option 4 is a conservative approach that would use an MCY strategy as a proxy for MSY to maintain or move FLA 3 towards a level that can support MSY. The level of risk to the stock by harvesting the population at the estimated MCY value cannot be determined given current information. FLA3 comprises eight species of right-eyed flounders and sole (refer Annex 1) and the proportion that each species contributes to the catch is expected to vary annually. It is not possible to estimate MCY for each species and stock individually.

Other factors

- 37 MFish has also considered what impact fishing at the level proposed under the TAC will have on:
- Associated fisheries;
 - Associated or dependent species;
 - Maintenance of biological diversity of the aquatic environment; and
 - Protection of habitat of particular significance for fisheries management.
- 38 MFish considers that none of these factors would require adjustment to the TAC proposals. Further information on these considerations is contained in the section on statutory considerations.
- 39 Lemon sole, English sole, yellow-belly and sand flounder have high fecundity, and are short lived. These characteristics are likely to increase the rate of rebuild towards the level that can produce the MSY if it is currently below that level. There is also uncertainty about whether current removals are likely to affect flatfish recruitment and abundance. For these reasons, it is considered necessary to propose an option where the TAC is below the level of current catches. Nonetheless, it is desirable to constrain the potential for any additional

effort and catch occurring in FLA 3 where recruitment may be declining. The impact of any reduction could be monitored and further management action taken if required.

Allocation of the TAC

40 The proposed allowances and TACCs are outlined in **Error! Reference source not found.**

41 It is proposed to determine allowances and TACCs based on each sector's current use of the fishery. FLA 3 is a valuable resource for both non-commercial and commercial fishers.

42 The Fisheries Act 1996 does not explicitly provide guidance about what level of allowance should be provided to sector groups. The Minister does have the discretion to reallocate from one sector to another. However, in shared fisheries where there is no clear information to support a 'utility based' model, MFish has a policy preference for allocating the TAC based on existing use.⁴ The section on *Statutory obligations and policy guidelines* at the start of this document gives further information about allocation.

43 MFish has considered the following factors when proposing how to allocate the TAC:

- Existing catch levels and importance of the resource to each sector;
- Current fishing practices;
- Economic impact; and
- Social and cultural impact.

44 Any allocation decision will have a range of economic, social, and cultural impacts.

Recreational catches

45 It is proposed that 150 tonnes be used as the estimate for recreational catch as a guide for calculating the recreational allowance. The same estimate is proposed for options 1, 2, 3 and 4.

46 Surveys of recreational fishing in 1992-94, 1996, 1999-00, and 2000-01 provide estimates of the recreational harvest of flatfish in FLA 3. The estimates from the 1999-2000 and 2000-01 surveys are very similar, and are considered the best available information about recreational take. Both surveys estimate recreational flatfish take in FLA 3 to be approximately 136-252 tonnes. Annex 1 contains further information on the recreational surveys.

47 The recreational survey estimates have relatively large ranges (30-50 tonnes in the 1996 survey and 127-252 tonnes in the 1999-2000 survey). MFish considers it is more appropriate to use the mid-point as an estimate of recreational catch rather than an alternative value such as the upper limit of the harvest estimate.

⁴ A utility-based model is one in which allocation between sectors explicitly takes into account an assessment of the relative value of a fish stock to various sectors.

Customary Maori catches

- 48 It is proposed that 5 tonnes be used as the estimate for customary Maori catch. The same estimate is proposed for options 1, 2, 3 and 4.
- 49 Tangata Tiaki have been appointed under the Fisheries (South Island Customary Fishing) Regulations 1999 (Customary regulations) for most of FLA 3 for at least five years. Customary authorisations show that 9000 fish were authorised to be taken between 1998 and 2006, but only 4000 were actually taken. It is likely that much of the FLA catch taken by tangata whenua is taken as recreational catch.

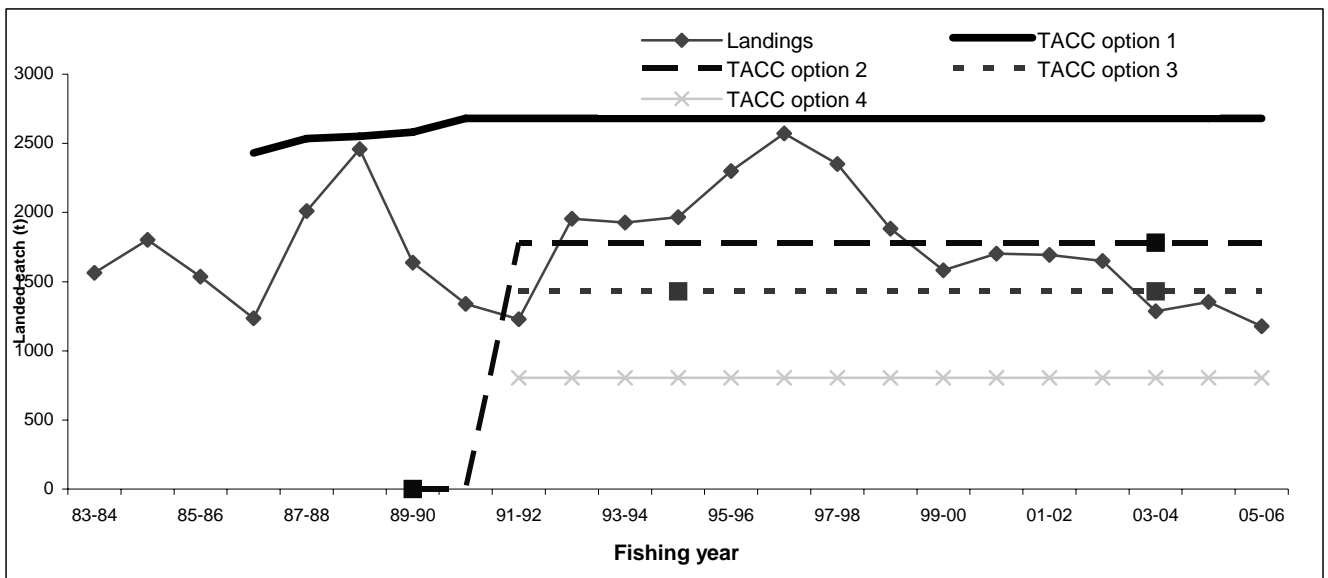
Estimate of other sources of fishing-related mortality

- 50 MFish proposes to include an estimate for other sources of fishing-related mortality for FLA 3. No allowance is currently set, but there are various potential sources of fishing-related mortality in FLA 3, including:
- Some fish are likely to escape from nets but subsequently die;
 - Flatfish may be subject to high-grading where market preference leads to the establishment of processor grading and size limits. Fishers may discard lower-grade fish that they are unable to sell;
 - Some illegal catch of flatfish for commercial sale is likely to occur; and
 - Both commercial and recreational fishers may lose nets. Such ‘ghost nets’ can continue to catch fish for some time.
- 51 Because there is no quantitative information on other sources of fishing-related mortality, the proposed allowance is based on approximately 2% of the estimated commercial and non-commercial take.

TACC

- 52 MFish proposes four TACC options.
- a) Option 1 – Status quo (2 681 t)
 - b) Option 2 – 15-year average of commercial catches (1 780 t)
 - c) Option 3 – last 5 year average of commercial catch (1 430 t)
 - d) Option 4 – TACC based on MCY less allowances (805 t)

Figure 2: Landings, current TACC and proposed TACCs. Option 1 Existing TACC; Option 2: 15-year average of landings; option 3: 5-year average of landings 2001-06; option 4: MCY estimate



- 53 Options 1 and 2 maintain the commercial catch limit at or above current catch levels
- 54 The TACC in option 3 (1 430 tonnes) is less than past catches have been in some years, so is likely to have greater socio-economic impacts than option 2. Because most of the FLA 3 catch is targeted, fishers may be able to adjust their activities without necessarily exceeding the TACC. Option 3 will reduce the amount of unfished FLA 3 ACE and “close” the current open access characteristics of FLA 3 to a greater extent than option 2.
- 55 Option 4 decreases the TACC below current catches in line with the estimate of MCY. The Act defines TAC in terms of MSY. The definitions of the biological reference points, Maximum Constant Yield (MCY) and Current Annual Yield (CAY), derive from two ways of viewing MSY: a static interpretation and a dynamic interpretation. The static interpretation is MCY, which is based on the idea of taking the same catch from the fishery year after year. MCY is defined as the maximum constant catch that is estimated to be sustainable, with an acceptable level of risk, at all probable levels of biomass. The acceptable level of risk is why the MCY is conservative.

Economic impacts

- 56 FLA 3 has a relatively high commercial value, and a large number of fishers are involved in the fishery. The port price was estimated at \$2.96 per kg in 2006. Conversely, FLA 3 quota trades at a low amount (generally \$3.50-\$4.50 per kg) compared to its market value.
- 57 Any reduction in the TACC will mean an ‘opportunity cost’ for commercial fishers who will no longer be able to catch up to the current commercial catch limit. But because the TACC has never been caught, it is more meaningful to compare the opportunity cost between average landings in recent fishing years (2001-06) to what fishers would be constrained to under the new TACC (Table 3).

Table 3: ‘Opportunity cost’ of decreases to the TACC (based on average landings of 1 430 tonnes in 2001-06)

	Option 1 (2 681t)	Option 2 (1 780t)	Option 3 (1 430 t)	Option 4 (805 t)
Difference between proposed TACC and 2001-06 average catch (tonnes)	+1 250	+350	0	-625
Potential loss to commercial industry (based on 2006 port price)	Nil	Nil	Nil	\$1 850 000

- 58 Because FLA 3 is listed on the Second Schedule of the Act, there is provision for an in-season increase to the TAC (under s 13(7)). This provision will potentially mitigate some of the lost opportunity costs because catches could be increased during years of high abundance. Using this provision may require some other way of assessing abundance, with potential cost-recovery implications for fishers. A possible mechanism for this will be the project FLA 2007-01 (which has high priority for 2007-2008) which will analyse CPUE.
- 59 Most of the FLA 3 commercial catch is taken by fishers who do not own quota, but buy ACE from quota holders. The market for ACE is quite active. Most quota holders who do not choose to fish their own entitlement sell it to other fishers (see Annex 1 for further information). If the commercial catch limit is reduced to the level of current catches, MFish expects that most commercial fishers will still be able to obtain ACE to cover their catches. This assumption is based on quota holders continuing to trade their ACE in a similar manner to their current practices.
- 60 However, because ACE will become scarcer, the price is likely to increase above the current level of \$0.20-0.40 per kg. This increase is likely to affect the profitability of individual fishing operations. Conversely, quota holders may benefit over the medium term because quota prices may increase.
- 61 Restricting the availability of ACE by reducing the TACC is also likely to limit the number of new fishers entering the fishery. MFish considers that existing fishers are more likely to be able to access ACE because they will already have relationships with quota holders.

Social and cultural impacts

- 62 Flatfish is an important recreational fish species. Important recreational fisheries for sand, black and yellow-belly flounder occur in most estuaries, coastal lakes and coastal inlets throughout the South Island, including the east coast harbours and estuaries, shallow bays, and Lake Ellesmere. The main methods are set netting, drag netting, and spearing.
- 63 Flatfish is also a species of customary significance. Pātiki (flounder) have traditionally been a popular food source that can easily be caught by spear fishing. Customary design patterns based on the flounder shape have been related to hospitality and being able to provide abundant food (refer Annex 1).
- 64 The relatively high estimates of non-commercial catches indicate that, at least until 2000, recreational and customary fishers were still able to catch flatfish.
- 65 Some recreational fishers have argued that commercial fishing affects the ability of non-commercial fishers to catch a ‘fair’ share of important recreational fisheries, including flatfish. Non-commercial fishers cannot use the bulk harvesting methods that commercial fishers use. The high level of the current TACC may increase the likelihood that commercial fishers preferentially catch available flatfish. This situation is likely to be particularly apparent in years of lower flatfish abundance. Decreasing the TACC and making allowances for recreational catch goes some way to addressing these issues.

Other Management Controls

Deemed value

66 MFish considers it is not necessary to alter the existing deemed value at this stage. As Annex 1 shows, the interim deemed value (\$0.75) is currently set above the level of most ACE trades. Although reducing the TACC is likely to alter the cost of ACE, there is insufficient information at this stage to propose a change to the existing deemed value (refer Table 12).

Future management

67 The proposed allocation of the new TAC under options 2, 3 or 4 would reduce the current TACC. MFish requests feedback from stakeholders on the proposed options. The fishery could be closely monitored to determine the social and economic results of the reduction, as well as the sustainability outcomes. Over the next several years, MFish proposes to monitor:

- quota and ACE prices;
- quantity of deemed values paid;
- analysis of CPUE data;
- anecdotal evidence about the impact of any change implemented; and
- targeted research on individual flatfish species.

68 Because changes in fishing gear used over time could also bias trends in catch per unit effort, MFish will commission research to investigate this factor.

69 MFish intends to investigate a fishery-independent relative abundance estimate from customised research work. Because recruitment and abundance in the largest commercial fisheries in FLA 3 appear to be declining, this research would be advanced as a priority through the research planning process that MFish regularly runs.

70 MFish will undertake further surveys to determine levels of recreational catch, including in FLA 3. MFish would also welcome submitters providing further information on the social and customary importance of flatfish.

71 The Inshore Working Group has suggested that environmental factors, such as siltation, may be affecting flatfish recruitment. MFish does not have a direct role in managing such environmental impacts. Nonetheless, MFish will monitor existing work being done in this field, and may be able to advocate for future work.

72 MFish intends to begin working with Tangata Whenua and stakeholders on a Fisheries Plan for the southern finfish stocks within the next three years. Other flatfish management issues, such as managing eight species as one stock complex, will be addresses within the context of this plan.

Statutory Considerations

73 The following statutory considerations have been taken into account when forming the management options for FLA 3:

- a) The purpose of the Act is to provide for the use of fisheries resources while ensuring

sustainability. Because information about flatfish abundance is uncertain, MFish has provided four options that could be consistent with the Act's purpose. The options propose a TAC for sustainability purposes, and allowances for commercial, recreational, and customary fishers.

- b) The TAC set under s 13 should be set at the level that can produce the MSY, or move the stock towards that level. As noted, there is uncertainty about where FLA 3 is in relation to the level that can produce the MSY. Because of this uncertainty, four TAC options are proposed. MFish considers, on the information available, that options 2, 3 and 4 are more likely to maintain or move the stock towards a level that can support MSY.
- c) The proposed TAC options have also taken into account the following factors:
 - i) Flatfish stocks may vary from year to year because they are affected by *environmental conditions*. However, specific environmental conditions have not been identified that would affect the movement of the stock towards a level that will support the MSY (as discussed in s 13(2)(b)(ii) of the Act);
 - ii) The *biological* characteristics of flatfish have been considered when proposing options for the TAC (as required under s 13(2)(b)(ii)); and
 - iii) Most flatfish is caught in target bottom trawl fisheries that catch a range of bycatch. Small quantities of flatfish are caught as bycatch in other inshore fisheries. Section 13(2) notes that, when setting a TAC, the Minister shall have regard to the *interdependence of stocks*. There is no biological information to suggest that the interdependence of stocks should affect the level of the TAC set for FLA 3 at this time.
- d) Social and economic consequences are a relevant factor when the Minister considers the way in which and rate at which a stock is moved towards or above a level that can produce the MSY (s 13(3)). MFish has identified differing social and economic consequences of altering the TAC and TACC under each of the four options.
- e) Natural variability is a relevant factor to consider when setting or altering a sustainability measure such as a TAC (s 11(1)(c)). This factor has been taken into account when choosing the periods over which to calculate average commercial catch.
- f) Section 9 sets out some environmental principles that must be taken into account when setting or altering sustainability measure such as a TAC:
 - a) Associated or dependent species should be maintained above a level that ensures their long-term viability;
 - b) Biological diversity of the aquatic environment should be maintained; and
 - c) Habitat of particular significance for fisheries management should be protected.
- g) The options proposed here are unlikely to lead to increased catches, or an expansion of fishing effort into previously unfished areas. All options are therefore considered

to adequately take into account these environmental principles).

- h) Associated or dependent species (s 9(a)) are any non-harvested species – such as seabirds or marine mammals – that are affected by the taking of any harvested species. There have been instances on the South Island east coast where endangered Hector's dolphins have been caught in commercial and non-commercial set nets and in commercial trawl nets. To manage this risk, set netting has been controlled by codes of practice and regulation in areas of concern on the coast within FLA 3. There have been reports of Hector's dolphin sightings in some east coast harbours and estuaries where set netting for flatfish sometime occurs. The proposed TAC options will not result in set net effort increasing in areas where Hector's dolphins may be found.
- i) Protection of biological diversity of the aquatic environment also needs to be considered (s 9(b)). Likewise, s 9(c) concerns the protection of habitat of particular significance to fisheries management. Because no increase in fishing effort is anticipated, it is not expected that the proposed TAC options would have any additional impact on biological diversity or significant habitats.
- j) A wide range of international obligations relate to fishing, including use and sustainability of fishstocks; and maintaining biodiversity (s 5(a)). MFish considers that the management options for FLA 3 are consistent with these international obligations.
- k) Existing control measures have been considered when making recommendations for any change to measures used to control the FLA 3 fishery (as outlined in s 11(1)(b)).
- l) No relevant fisheries plan has been approved under s 11(2A)(b) of the Act.
- m) As discussed in Annex 1, this paper has considered whether there are any relevant conservation services or fisheries services (as outlined in s 11(2A)(a and c)). No suggestion is made at this stage to alter any decision about whether such services are required. MFish does consider that some further research to update the catch per unit effort analysis for FLA 3 is required and project FLA 2007-01 will be carried out in 2007-2008. There are no known relevant provisions concerning the coastal marine area in any policy statement or plan under the Resource Management Act 1991, or any management strategy or plan under the Conservation Act 1987 (as outlined in s 11(2)(a) and (b) of the Fisheries Act). See Annex 1 Table 11 & 12.
- n) **Fiordland (Te Moana o Atawhenua) Marine Management Act 2005:** In recognition of the Fiordland (Te Moana o Atawhenua) Marine Area's local, national, and international importance, unique marine environment, distinctive biological diversity, and outstanding landscape and cultural heritage, the Government passed the Fiordland (Te Moana o Atawhenua) Marine Management Act 2005 (the 2005 Act). The Fiordland Marine Area is within the FLA 3 QMA. (See Figure 2).
- o) The purpose of the 2005 Act includes establishing the Fiordland Marine Guardians to provide advice on fisheries management, biosecurity, sustainable management, and marine preservation and protection. The 2005 Act also seeks to facilitate and promote co-operation between the Guardians and management agencies, to assist in achieving the integrated management of the Fiordland Marine Area.

- p) Section 12 of the Act establishes the Fiordland Marine Guardians. Section 13 of the 2005 Act states that the functions of the Guardians are, *inter alia*, to advise and make recommendations to management agencies and Ministers who exercise functions under specified enactments (including the Fisheries Act), to achieve the purpose of this Act. This includes, but is not limited to, advice and recommendations on the effectiveness of management measures in the Fiordland (Te Moana o Atawhenua) Marine Area.
- q) The 2005 Act goes on to state in s 26 that all management agencies exercising powers or carrying out functions in the Fiordland (Te Moana o Atawhenua) Marine Area must take into account any advice or recommendations provided by the Guardians (this includes powers and functions under the Fisheries Act 1996).
- r) FLA 3 includes the Fiordland coast and the Ministry will seek specific comment from the Fiordland Marine Guardians on the proposals.
- s) The nature of the fishery and the interests of each fishing sector have been considered in proposing the TACC and allowances for recreational and customary interests and other sources of fishing-related mortality (sections 21(1)(a and b), 21(4)(i and ii) and 21(5)). There are currently three mātaītai reserves within FLA 3. Areas have been closed for customary fishing purposes in FLA 3, but the closures do not affect flatfish fisheries. There is no commercial fishing in the internal waters of Fiordland - introduced in 2005 as part of the Fiordland Marine Management Strategy to reduce fishing pressure in this area.
- t) Section 10 sets out information principles that are to be taken into account when setting TACs.
- u) MFish has used the surveys of recreational fishing in 1999-00 and 2000-01 as the basis for estimates of recreational catch in FLA 3. Limitations are acknowledged with the use of these surveys. In the absence of other information on recreational catches, the surveys are nonetheless considered to provide the best available information.

Conclusion

- 74 The TACC for FLA 3 is currently set substantially above the level of commercial catches. A TAC needs to be set that is more likely to fulfill the obligation to maintain or move FLA 3 towards a level that can support MSY.
- 75 MFish considers it unlikely that a TAC incorporating the current TACC of 2 681 tonnes (as well as allowances for recreational and customary catches) would move FLA 3 towards a level that would support MSY. This TACC was set at a high level as result of quota appeals, following introduction to the QMS and was intended to allow high levels of commercial catch in years of high abundance.
- 76 Although MFish recognises that commercial fishers are not obliged to fully catch their catch entitlements, the existing TACC appears to be too high, given that it has never been caught. In addition, recent information indicates that inter-annual abundance is not as variable as previously thought in flat fish stocks.
- 77 Option 1 involves the greatest risk to stock sustainability, given that the current stock status of FLA 3 is unknown. The current plenary assessment for the stock is that, if it were fully

caught, the existing TACC is unlikely to move FLA 3 towards a level that could sustain the maximum sustainable yield (MSY).

- 78 Options 2 and 3 both propose to base the TAC on estimates of recent catches. The two options differ in the period over which they estimate current commercial catch. Option 2 averages commercial catch over a fifteen year period. This option makes greater provision for the natural variability of flatfish, and incorporates past years in which commercial catches have been higher than at present. Option 2 allows fishers to cover catch with ACE in most years and presents a lower sustainability risk than option 1.
- 79 Option 3 averages commercial catches over the last five years. This option more closely reflects historic low catches in the commercial fishery. Using the period of lower average catch also makes more allowance for the possible decline in flatfish abundance and recruitment. Commercial catches have exceeded the TACC proposed under option 3 in most years. Option 3 is a more conservative option with respect to sustainability risk and reduces the open access nature of the present fishery. This option places a greater constraint on commercial fishers. However, because FLA 3 is largely a target fishery, commercial fishers should be able to constrain their catches within the TACC proposed under option 3.
- 80 Option 4 uses the estimate of MCY as a proxy for MSY. This option places the TACC well below current and historic catch levels. This option removes the pressure on bycatch stocks and ends the open access nature of the present fishery. Option 4 has the greatest social and economic impact. The level of risk to the stock by harvesting the population at the estimated MCY value cannot be determined.
- 81 MFish requests feedback from stakeholders on the likely affects of the proposed measures.

Preliminary Recommendations

82 MFish proposes that for the 2007-08 fishing year:

- a) **Option 1** - set a TAC of 2 863 tonnes for FLA 3 and within that TAC set:
- i) a customary allowance of 5 tonnes;
 - ii) a recreational allowance of 150 tonnes;
 - iii) an allowance of 57 tonnes for other sources of fishing-related mortality; and
 - iv) a TACC of 2 681 tonnes.

OR

- b) **Option 2** - set a TAC of 1 974 tonnes for FLA 3 and within that TAC set:
- i) a customary allowance of 5 tonnes;
 - ii) a recreational allowance of 150 tonnes;
 - iii) an allowance of 39 tonnes for other sources of fishing-related mortality; and
 - iv) a TACC of 1 780 tonnes.

OR

- c) **Option 3** - set a TAC of 1 617 tonnes for FLA 3 and within that TAC set:

- i) a customary allowance of 5 tonnes;
- ii) a recreational allowance of 150 tonnes;
- iii) an allowance of 32 tonnes for other sources of fishing-related mortality; and
- iv) a TACC of 1 430 tonnes.

OR

d) **Option 4** - set a TAC of 980 tonnes for FLA 3 and within that TAC set:

- i) a customary allowance of 5 tonnes;
- ii) a recreational allowance of 150 tonnes;
- iii) an allowance of 20 tonnes for other sources of fishing-related mortality; and
- iv) a TACC of 805 tonnes.

ANNEX 1

Fishery Information and biological characteristics

- 83 Flatfish is a generic term used to describe 8 main species of right-eyed flounders and sole within New Zealand's fisheries waters. Flatfish are defined by the Fisheries (Amateur Fishing) Regulations 1986 and the Fisheries (Commercial Fishing) Regulations 1986 as: lemon sole (*Pelotretis flavilatus*), New Zealand sole (*Peltorhamphus novaezealandiae*), yellowbelly flounder (*Rhombosolea leporina*), sand flounder (*Rhombosolea plebia*), greenback flounder (*Rhombosolea tapirina*), black flounder (*Rhombosolea retiaria*), turbot (*Colistium nudipinnis*), and brill (*Colistium guntheri*).
- 84 Flatfish are shallow water species that generally inhabit the coastal waters (less than 50 meters deep) around New Zealand's coastline, although some species occur to moderate depths on the continental shelf and beyond.
- 85 Virtually all of the 14 or so species of flatfish found in New Zealand waters are unique to New Zealand⁵. There is evidence that many stocks are localised and the interrelationships of neighbouring populations have not been thoroughly studied. The best available information results from studies on the variation in morphological characteristics of sand flounder and from tagging studies of sand and yellow-belly flounder. These studies indicate that sand flounder off the east and south of the South Island appear to be a single, continuous population⁶. Sand flounder stocks off the east and south of the South Island are clearly different from stocks from central New Zealand waters and from those off the west coast of the South Island. Tagging experiments show that sand flounders, and other species of flounder, can move substantial distances off the east and south coasts of the South Island.

Age, size and growth

- 86 New Zealand flatfish species are believed to be fast growing, short-lived and prolific. Recent research on brill and turbot⁷ indicates that growth is rapid for the first 3 years of their life and then slows afterwards. Females generally grow larger and faster than males.

Size at maturity

- 87 Flatfish reach maturity between 2-4 years. Most species grow up to 20 to 40 cm at maturity, although size does vary slightly between species. Sole species generally grow to approximately 50cm and flounders to 45cm. Brill and turbot grow to a larger size than other species, reaching 70 to 80 cm in length.

Maximum age

- 88 Most species only survive to 3-4 years of age, with very few reaching 5-6 years. Brill and turbot may survive to maximum ages of 21 and 16 years respectively⁸.

Natural Mortality

⁵ Recent studies by Van Den Enden et al. (2000) indicate that there is a significant genetic difference between the New Zealand and Australian populations of *Rhombosolea tapirina*.

⁶ Studies in Tasman Bay and the Hauraki Gulf indicate that flatfish in fairly enclosed waters may be effectively isolated from neighbouring populations and should be considered as separate stocks.

⁷ Ministry of Fisheries Research project FLA2000-01

⁸ Much of the early research done on the age of lemon sole is unsatisfactory.

89 Little is known about the natural mortality of flatfish. The mortality of sand flounder, in Canterbury, has been calculated at 1.1 to 1.3.

Spawning and breeding behavior

90 Juveniles congregate in sheltered inshore waters, e.g., estuarine areas, channels, shallow mudflats and sandflats, where they remain for up to two years. Juvenile survival is highly variable. Flatfish move offshore for first spawning at 2–3 years of age during winter and spring. Adult mortality is high, with many flatfish spawning only once and few spawning more than two or three times. Fecundity is high, e.g., from 0.2 million eggs to over a million eggs in sand flounders.

Research on Biology and distribution of Flatfish

91 There has been little research into the biology of flatfish and their ecological relationships. Most studies were carried out in the 1970s on sand flounder. Recently, there have been a number of studies on brill and turbot but, in general, flatfish in FLA 3 must be considered to be poorly understood.

Table 4: The main characteristics of flatfish species.

Species	Habitat	Size	Fishing methods
Sand flounder	NZ only. Widespread in inshore sandy areas and mouths of rivers.	25-35 cm (up to 45 cm)	Recreational: beach seines and set nets. Commercial: trawling and set nets.
Yellow belly flounder	NZ only. Widespread in sandy areas and seafloor, sheltered bays, estuaries, and harbours.	25-35 cm (up to 45 cm)	Recreational: beach seines and set nets. Commercial: trawling and set nets.
Greenback flounder	NZ and southern Australia. Moderately common in shallow coastal areas.	25-40 cm	Recreational: seines, set nets and spears. Commercial: set nets and sometimes eel traps.
Black flounder	NZ only. Common in river estuaries.	15-25 cm	Recreational: set nets and beach seines. Commercial: trawl.
Turbot	NZ only. Southern coastal areas.	25-45 cm	Set nets and beach seines. Commercial: trawl.
Brill	NZ only. Southern areas.	25-40 cm. (Up to 70 cm.)	Set nets; Commercial: trawl.
New Zealand sole	NZ only. Inshore sandy areas.	25 – 35 cm.	Trawlers.
Lemon sole	NZ only. Shallow to mid shelf.	25-35cm. (Up to 50 cm)	Trawlers.

Table 5: Estimates of biological parameters (Annala et al., 2001)

Fishstock	Estimate				Source		
1. Natural mortality (M)							
Sand flounder Canterbury (FLA 3)	1.1-1.3				Colman (1978)		
2. Weight = a (length) b (weight in g, length in cm total length)							
	Females			Males			
New Zealand sole (FLA3)	a=0.03578	b=2.6753		a=0.007608	b=3.0728		McGregor (unpublished)
3. von Bertalanffy growth parameters							
	Females			Males			
Sand flounder	K	t₀	L_∞	K	t₀	L_∞	
Canterbury (FLA3)	0.235	-0.083	59.9	0.781	n.a.	37.4	Mundy (1968), Colman (1978)

Catch Information

Commercial fishery

92 Annual flatfish catches for FLA 3 in recent years have been between about 1 200 and 1 700 tonnes, but historically have varied two-fold. Peaks of 2 573 tonnes and 2 458 tonnes occurred in 1996-97 and 1988-89 respectively. See Table 6

Table 6: reported landings (t) of Flatfish in FLA 3 for 1983-84 to 2005-06 and actual TACs (t) from 1986-87 to 2005-06

Fishing year	Catch landings (t)	TAC (t)
1983-1984	1 564	-
1984-1985	1 803	-
1985-1986	1 537	-
1986-1987	1 235	2 430
1987-1988	2 010	2 535
1988-1989	2 458	2 552
1989-1990	1 637	2 585
1990-1991	1 340	2 681
1991-1992	1 229	2 681
1992-1993	1 954	2 681
1993-1994	1 926	2 681
1994-1995	1 966	2 681
1995-1996	2 298	2 681
1996-1997	2 573	2 681
1997-1998	2 351	2 681
1998-1999	1 882	2 681
1999-2000	1 583	2 681
2000-2001	1 702	2 681
2001-2002	1 694	2 681
2002-2003	1 641	2 681
2003-2004	1 286	2 681
2004-2005	1 353	2 681
2005-2006	1 177	2 681

- 93 Much of the catch in FLA 3 is targeted (between 85% and 97%). Around 95% of targeted FLA 3 landings are taken by bottom trawl, 3% is taken by set net and less than 1% by Danish seine. The majority of trawling occurs on the open coast from Pegasus Bay south to Te Waewae Bay. Danish seining occurs almost exclusively off Timaru. Peak catches in the trawl fishery occur in spring to autumn for most of FLA 3.
- 94 Commercial fishers predominantly (over 80% since 2001) catch flat fish when they are target fishing for it. The main associated bycatch was comprised of large quantities of red cod and lesser amounts of barracuda, skate, elephant fish, giant stargazer, gurnard, spiny dogfish and tarakihi.

Flatfish caught as a by-catch of other fisheries

- 95 Flatfish is a minor bycatch of other targeted species, e.g. elephant fish, hāpuku and bass, ling, red cod, red gurnard, rig, school shark, sea perch, tarakihi, and yellow eyed mullet. Flatfish is only a significant bycatch when fishing for red cod.

Spatial variation in FLA 3 catch

- 96 The amount of flatfish caught varies around FLA 3. The largest commercial takes are in the inshore areas along the eastern and southern coast, with the Catlins (Stat Area 026), Pegasus Bay (Stat Area 020) Canterbury Bight (Stat Area 022), Otago (Stat Area 024), Foveaux Strait (Stat Area 025), and Te Waewae Bay (Stat Area 030) the source of most commercial catch.
- 97 Most statistical areas show a decrease in catch over the 1998-99 and 1999-2000 fishing years with a recovery in 2000-2001, the exceptions being Pegasus Bay (Stat Area 020), where the catch continued to decrease in 2005-2006, and Te Waewae Bay where the catch has continued to increase throughout the 2000 s.

Figure 3: Map showing the variation in the flatfish catch in FLA 3 1995-96 to 2005-06.

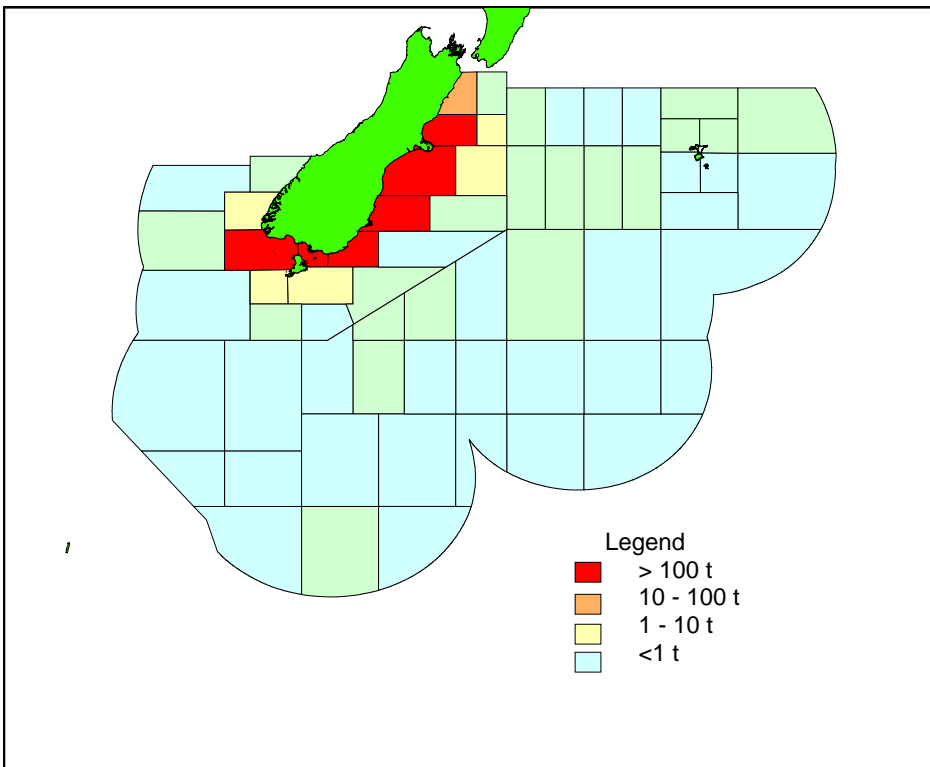
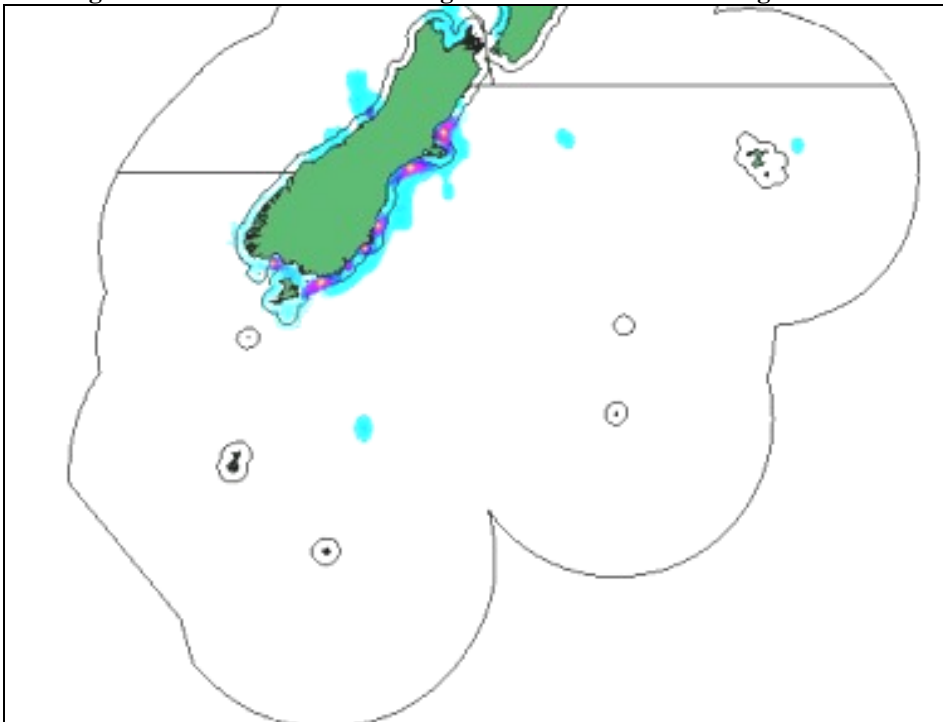


Figure 4: Schematic diagram showing the main flatfish fishing grounds. Information is a combination of latitude and longitude from catch effort landing returns and local knowledge.



- 98 The recording of generic flatfish is an obstacle to the understanding and management of individual flatfish species within FLA 3. As previously noted, the flatfish catch is made up of a number of species and the problem lies in the fact that catches are often recorded as generic “flatfish” (and sometimes “flounder” or “sole”). This varies both spatially and temporally.
- 99 The fishery is mainly confined to the inshore domestic trawl fleet except for small incidental bycatch of sole, brill, and turbot by deepwater trawlers, and some localised set-netting. There were a total of 126 vessels that caught flat fish over the 2005-2006 season. Medium sized vessels, between 10 m to 46 m long are used to catch the majority of flatfish. The majority of these vessels are of domestic origin (99%), with the remainder chartered or unknown.

Recreational fishery

- 100 Table 8 shows harvest estimates from the relevant recreational surveys.⁹ Surveys were carried out in the North region in 1993-94 (Teirney *et al.* 1997), and nationally in 1996 (Bradford 1998), 1999-00 (Boyd and Reilly 2002), and a roll-over survey in 2000-01 (Boyd *et al.* 2004).
- 101 The surveys that estimated a harvest range give 30-252 t, so a mid point for allocation is 150 t (see para 44).

Table 7: Estimated number and weight of flatfish harvested by recreational fishers. (- Data not available).

Date	Survey	Number	c. v.%	Harvest range (t)	Point estimate (t)
1993-94	North	-	-	-	-
1996	National	113 000	13	30-50	40
1999-00	National	39 000	33	127-252	189.9
2000-01	National	284 000	17	-	136.7

Impacts of fishing

- 102 No research has been conducted on the catch of seabirds in flatfish set net fisheries. However, the *National Plan of Action to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries* (April 2004) does not list flatfish as one of the fisheries with seabird interactions of particular concern. Because the options proposed here are unlikely to lead to increased catches, or an expansion of fishing effort into previously unfished areas, it is unlikely there would be a significant increase in the adverse effects on associated or dependent species.
- 103 Flatfish set net fisheries could potentially represent a risk to the endangered west coast South Island Hector’s dolphin. Some of these dolphins have been accidentally caught and killed in set nets. The TAC proposals are unlikely to lead to expansion of set net effort and, therefore do not increase any risk to the dolphins.

⁹ In December 2003, technical members of the Recreational Working Group (RWG) examined the methodologies used for the 1996, 1999-00 and 2000-01 surveys. The RWG considered that the 1996 results should not be used as absolute estimates of recreational catch, because the results were considered to be substantially under-estimated. More recently, the 1996 estimates are reported to contain methodological errors and are considered unreliable. Technical members of the RWG have advised more recently that the estimates of recreational catch from the 1999-00 and the 2000-01 surveys may be implausibly high for some important fisheries, and have cautioned against their use.

104 Biological diversity of the aquatic environment has been considered when assessing consequences of the proposed options. The use of set nets can potentially impact on species diversity. Many harbour areas where flatfish are targeted are important nurseries for a wide range of inshore species. Juveniles of various species may be caught in set nets. The minimum mesh size limit is considered to provide some protection. Because no increase in fishing effort is anticipated, it is not expected that any of the proposed TACs would have any additional impact on biological diversity. Set netting is also considered unlikely to impact on seabed habitat.

Social, Cultural and Economic Factors

Customary importance

- 105 There is limited information about the social and cultural significance or importance of flatfish to customary fishers. However, being able to provide fish for special occasions is important for *manaakitanga* (hospitality).
- 106 Pātiki (flounder) have traditionally been a popular food source since they can easily be caught by spear fishing. Submissions to the Waitangi Tribunal in the form of the Ngai Tahu Sea Fisheries Report (The Habib Report) 1988 noted that “Ngai Tahu certainly took four species of flounder, as well as brill (horoti), turbot (horo), lemon sole (patiki) and NZ sole (patiki rori and horihori).
- 107 Flounder are the inspiration for the pātiki or pātikitiki designs of some tukutuku panels (the woven panels that adorn meeting houses). The pattern is based on flounder’s lozenge or diamond shape. The pātikitiki pattern has been related to hospitality, and being able to provide abundant food for the whole iwi.

Social importance

108 Flounder species are relatively accessible for non-commercial fishers to catch, using spears or nets. Flounder are likely to be an important food source in some communities. The recreational harvest estimates indicate that flounder is a popular recreational species, with harvests in the order of 6-10% of commercial catches.

Economic importance

109 Recent port prices for FLA 3 are shown in Table 8. National exports of sole species are around 800 tonnes a year, with a value of \$6 million in 2004. Flounder is also commonly sold on the domestic market. Landings from FLA 3 are around 45% of national landings.

Table 8: Port price for FLA 3 (\$/kg)

	2002	2003	2004	2005
FLA 3	4.5675	4.75	5.2609	2.96

Table 9: National exports of Soles (Lemon and NZ) in 2005 and 2006. FLA 3 accounts for approximately 45% of national landings.

Sole Lemon and NZ exports Type	2005		2006	
	Volume (kg)	Value (\$)	Volume (kg)	Value (\$)
Chilled fillets	157	6	722	0
Chilled headed and gutted	220	1,514	2,029	0
Chilled whole	4,910	837	1,850	0
Frozen fillets	43,687	2,503	144,388	317
Frozen headed and gutted	20,770	13,727	18,265	25,406
Frozen whole	717,676	345,575	733,710	287,032
Total	787,420	\$364,156	900,964	\$312,755

- 110 FLA 3 quota shares have generally traded for between \$3 and \$5 per kg over the last four years. ACE prices have commonly been in the range \$0.20 to \$0.40
- 111 The available ACE trading data suggests that there is an active market, with ACE available for most fishers to cover their catches.
- 112 By the end of the 2005-06 fishing year, most major quota holders had sold their ACE to other fishers.
- 113 The relatively low amounts paid in deemed values also suggest that ACE are readily available. The interim deemed value is set above the level of most ACE sales. The annual deemed value is set at \$1.50.

Table 10: Deemed value payments in FLA 3, 2003-04 to 2005-06

	Interim DV	Annual DV payment	Ramping (Y/N)	DV Payments		
				2003-04 (\$)	2004-05 (\$)	2005-06 (\$)
FLA3	0.75	1.50	Y	5,297	3,286	582

- 114 There are 83 quota holders in FLA 3 (as at 18 May 2007). Quota is generally held in small parcels. The maximum holding is 449 tonnes (17% of the TACC). There were 104 holders of ACE during the 2006-07 fishing year.

Table 11: Local Coastal plans under the RMA 1991

Regional council	Document	Status	Issues raised
Environment Canterbury	Regional Plan	Operational 2005	Coastal protection and wet land preservation
Otago Regional Council	Regional Plan Coast	Operational 2001	Identification coastal protection areas within FLA 3. These include several estuaries.
Environment Southland	Regional Plan	Operational 2007	Estuarine protection and water quality in discharges

Table 12: Relevant management strategy or management plan under Conservation Act 1987

<i>Area within FLA 3</i>	<i>Document</i>	<i>Expire date</i>	<i>Sustainability issues</i>	<i>Specific areas of concern</i>
Kaikoura Coast to the Conway River	Conservation Management Strategy Nelson Marlborough Conservancy	2006	The effect of fishing on natural marine ecosystems. Reduction of biodiversity by fishing. Effect of marine fishing on terrestrial ecosystems (dependent on nesting grounds of sea birds). Achieving integrated management of marine and terrestrial environment.	<i>Kaikoura Peninsula:</i> Internationally important habitat of dolphins and whales. Part of Peninsula deemed possible site for marine reserve. <i>Kaikoura Coast:</i> Important breeding and nursery area for marine mammals, fish and sea birds.
Canterbury Coastline Conway to Waitaki River	Conservation Management Strategy Canterbury Conservancy	2009	Over harvesting of marine ecosystems	<i>Motunau Island:</i> important nesting site for seabirds including white flippered penguins Banks Peninsula Canterbury Coastline
Otago's coastline from the Waitaki River to Waikawa	Conservation Management Strategy Otago Conservancy	2006	Over- fishing a threat to the food supply of a number of marine mammals and sea birds including: Hooker's sea lion, NZ fur seal, leopard seal, southern elephant seal, yellow eyed penguin, and south island shag.	

<i>Area within FLA 3</i>	<i>Document</i>	<i>Expire date</i>	<i>Sustainability issues</i>	<i>Specific areas of concern</i>
Eastern Otago, Southland and Fiordland coastline from Waikawa to Awarua Point.	Conservation Management Strategy Southland/West Otago Conservancy	2008	The effects of fishing on the marine environment, especially marine mammals and sea birds. In particular: Effect of removal of fish species (targeted and non targeted) on food chain; Destruction of habitat by fishing methods; and Importance of protecting representative and important marine environments.	<i>Porpoise Bay</i> : Important habitat for hectors dolphin, hooker's sea lions and yellow eye penguins. <i>Estuaries</i> : including Awarua Bay, Waituna Bay, New River Estuary, Toetoe Estuary: Important habitat for sea birds and marine mammals. Proposed RAMSAR sites. <i>Te Waewae Bay</i> : Southland's largest population of Hector's dolphin's <i>Solander Island</i> : Important habitat for sea birds and marine mammals, especially NZ fur seals and Buller's molly hawks. <i>Fiords</i> : Pristine aquatic environment with important communities of marine mammals, seabirds and coral.

<i>Area within FLA 3</i>	<i>Document</i>	<i>Expire date</i>	<i>Sustainability issues</i>	<i>Specific areas of concern</i>
Stewart Island and surrounding Islands	Conservation Strategy Stewart Island	2007	Diverse populations of seaweed, brachiopods, marine mammals, and seabirds.	Stewart Island Paterson Inlet Mutton Bird Islands
Sub Antarctic Islands	Sub Antarctic Islands	2008		