

S8617

24 July 2008

Minister of Fisheries

2008 REVIEW OF THE COROMANDEL SCALLOP FISHERY TAC – FINAL ADVICE PAPER (FAP)

Executive summary

- 1 MFish is seeking your decision on whether or not to increase the TAC and ACE for the Coromandel scallop fishery (SCACS) for the 2008–09 season.
- 2 An Initial Position Paper (IPP) (Appendix 1), released on 18 June 2008, proposed two options for an in-season TAC and ACE increase for SCACS under ss 13(7) and 68(1) of the Fisheries Act 1996 (the Act). The two options were based on different levels of allowances for non-commercial interests. Alternative options are also available at your discretion. If increased, the TAC would revert to 48 tonnes meatweight¹ at the end of the 2008–09 scallop fishing year in accordance with s 13(8) of the Act.
- 3 Two draft *Gazette* notices relevant to each option are attached (Appendix 3) for your consideration and signature. Please sign the notice that pertains to the option you agree to. Should you decide to set alternative management measures, MFish will provide an appropriate notice for your signature. Once aware of your decision, MFish will also provide a draft decision letter for your consideration and signature. This letter will inform stakeholders of your decision and the reasons for it, as required under s 12(2) of the Act.
- 4 The SCACS stock occupies the area from Cape Rodney in the Hauraki Gulf to Town Point in the Bay of Plenty. SCACS is included on the Second Schedule of the Act, which allows for an in-season TAC increase, if supported by information about the abundance of scallops during the current fishing year, and after having regard to the matters specified in s 13(2) of the Act.
- 5 Since 1978, research surveys have been used to estimate the abundance of scallops in the Coromandel scallop fishery. Yield estimates based on surveys

¹ Meatweight refers to the edible part of the scallop. All figures quoted in tonnes refer to meatweight tonnes unless otherwise stated.

have been used to determine catch limits for the fishery. These estimates provide the key information for decisions concerning the utilisation of the resource while ensuring sustainability.

- 6 In making your decision on required services for 2008–09, you agreed to an optional survey for SCACS during 2008. Quota holders decided that scallop abundance should be assessed this year, and a survey was undertaken in May. The survey indicates that while scallop biomass might have decreased compared with last year, it remains high by recent historical standards and the fishery can support an increase above the baseline TAC for the current fishing year. Details and results from the survey are discussed in the IPP (Appendix 1).

Key issues

- 7 The key issues to be considered for the SCACS fishery are:
- a) whether or not the survey information supports the proposed in-season increase in the TAC (and ACE); and
 - b) whether or not the TAC should be increased to provide for increased separate allowances for Maori customary non-commercial interests and recreational fishing interests.

Summary of options

Final proposals

- 8 MFish proposes two management options for your consideration:

Option 1: Increase the ACE and increase the non-commercial allowances

The TAC for SCACS is increased from 48 to 148 tonnes meatweight, and within the TAC:

- i) increase the allowance for recreational fishing from 7.5 tonnes meatweight to 10 tonnes meatweight;
- ii) increase the allowance for customary fishing from 7.5 tonnes meatweight to 10 tonnes meatweight;
- iii) increase the allowance for other sources of fishing-related mortality from 11 tonnes meatweight to 33 tonnes meatweight;
- iv) increase the ACE for quota owners from 22 tonnes meatweight to 95² tonnes meatweight; and note that
- v) at the end of the current fishing year for SCACS, the TAC will revert to 48 tonnes meatweight, the allowance for recreational fishing will revert to 7.5 tonnes meatweight, the allowance for customary fishing will revert to 7.5 tonnes meatweight, the allowance for other sources of fishing-related mortality will

² The actual quantity of ACE proposed by MFish is 94.5 tonnes meatweight, referred to in this paper as 95 tonnes for simplicity.

revert to 11 tonnes meatweight, and the ACE will revert to 22 tonnes meatweight.

Option 2: Increase the ACE and retain the current non-commercial allowances

Increase the TAC for SCACS from 48 to 143 tonnes meatweight, and within the TAC:

- i) retain the recreational fishing allowance at 7.5 tonnes meatweight;
- ii) retain the customary fishing allowance at 7.5 tonnes meatweight;
- iii) increase the allowance for other sources of fishing-related mortality from 11 tonnes meatweight to 33 tonnes meatweight;
- iv) increase the ACE for quota owners from 22 tonnes meatweight to 95 tonnes meatweight; and note that
- v) at the end of the current fishing year for SCACS, the TAC will revert to 48 tonnes meatweight; the allowance for other sources of fishing-related mortality will revert to 11 tonnes meatweight, and the ACE will revert to 22 tonnes meatweight.

Management Framework

- 9 The Coromandel Scallop Fishery operates to an April fishing year (1 April to 31 March). The commercial fishing season begins on 15 July and finishes on 22 December while the recreational season opens 1 September and closes 31 March. The fishery is bounded by Cape Rodney in the north and Town Point (south of Tauranga) in the south and includes the barrier islands and the majority of the Hauraki Gulf (see map on page 1 of the IPP attached).
- 10 The abundance of scallops in the Coromandel fishery area is known to vary considerably from year to year. This is a feature of many scallop populations around the world. The variable abundance arises from the relatively short lifespan of scallops and hence the few age classes that typically make up the population. Environmental factors can strongly influence the growth and natural mortality of young scallops, which in turn contribute to variability in abundance.
- 11 This is recognised in the Fisheries Act 1996 with specific provisions to list stocks whose abundance varies highly between years on the Second Schedule and manage them under s 13(7). Should information about the abundance within the season indicate that a greater TAC would be sustainable, then you can approve an increase to the TAC within the season after having regard to the matters specified in subsections (2) & (3).
- 12 Subsections (2) & (3) of section 13, which apply directly to most Quota Management System stocks managed under s 13, require you to:

Subsection 13(2) - set a TAC that:

- a. Maintains the stock at or above a level that can produce the maximum sustainable yield (MSY) having regard to the interdependence of stocks; or
- b. Enables any stock that is currently below a level that can produce the MSY to be altered:
 - (i) in a way and at a rate that will result in the stock being restored to or above a level that can produce the MSY having regard to the interdependence of stocks; and
 - (ii) within a period appropriate to the stock having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or
- c. Enables the level of any stock currently above the biomass that can produce the MSY to be altered in a way and at a rate that will result in the stock moving towards or above a level that can support the MSY.

Subsection 13(3) – in setting the TAC and in considering the way and rate at which a stock is moved towards or above a level that can produce the MSY under ss 13(2)(b) or (c), you shall have regard to such social, cultural, and economic factors as you consider to be relevant.

- 13 Section 13(7) requires that you have regard to these matters when considering stocks such as Coromandel scallops after considering information about abundance and this paper presents information about these matters. Some additional information is also set out in the IPP (attached) principally at paragraphs 11 to 18.
- 14 The Act defines the MSY as 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. The level that can produce the MSY may be a dynamic target rather than a fixed point, as is the case for the Coromandel Scallop fishery.
- 15 Having regard to the population dynamics of the Coromandel scallop stock, it has been determined that estimating the MSY as a constant proportion of each season's biomass or abundance is most appropriate. This approach takes account of the varying abundance or biomass and allows catch to be maximised over time while ensuring sustainability for most types of fisheries (including scallops). The constant harvest proportion is determined following international practice by applying a set fishing mortality rate (termed $F_{0.1}$) that has been shown to deliver good yields while ensuring sustainability. Each year's seasonal or annual yield is termed the Current Annual Yield or CAY, and forms the basis for considering any in-season increase to the TAC for Coromandel scallops.
- 16 However, the determination of in-season abundance, yields, and TAC increases depend upon scientific surveys, analyses, and consultation within the season. Experience in the Coromandel fishery has shown that surveys are best done as close as possible to the start of the regulated fishing season in mid-July. A baseline TAC has been applied to the fishery to enable some fishing to start before the in-season survey results are finalised and consultation on any

proposed increase to the TAC is completed. The approach has been used for several years and relies on a hybrid of two methods of estimating MSY in order to ensure the sustainable use of the fishery over time.

- 17 The maximum constant yield (MCY) has been estimated for the fishery as the unvarying maximum catch limit that the fishery can sustain year after year, with an acceptable level of risk. The MCY is the basis for the baseline TAC at the start of each season.
- 18 In general, the higher the natural variability in the abundance of a fish stock, the lower the catch limit under an MCY approach as the catch level must be sustainable, even when abundance is poor. When the Coromandel fishery was brought into the QMS in 2002, MFish estimated the MCY as follows, using the method set out in the “Guide to Biological Reference Points” section of the Annual Plenary reports³. In summary, this process involved the following steps:
 - Catches over the preceding 10 year period (1992-2001) were averaged
 - A natural variability factor of 0.4 was selected to account for the considerable variability of scallop fisheries
 - The ten year average was multiplied by 0.4 to give an MCY estimate for the Coromandel fishery of 22 tonnes.
- 19 This MCY estimate of 22 tonnes for the Coromandel fishery forms the baseline TACC, and allows commercial fishers to harvest up to 22 tonnes in any fishing year.
- 20 If commercial fishers wish to harvest more than 22 tonnes, a biomass survey of the commercial areas of the fishery is required (commercial fishers have supported a survey in nine of the last 10 years). The biomass survey produces estimates of both stock biomass for the year and CAY for the fishery (this year’s survey is discussed below). The CAY estimate provides the basis for considering an in-season increase to the TAC for that year to achieve the maximum sustainable yield from the fishery over time. Taking a catch at the level of the CAY each year would, in theory, result in the stock being maintained at the (fluctuating) biomass level that can produce the MSY over the longer term. However, in all years since 2004, the TAC has been set at a level well below the CAY, which means that the biomass has been maintained above the B_{MSY} level.

Coromandel Scallop In-season Review Process

- 21 In years where a pre-season survey shows scallop numbers are comparatively high, s 13(7) of the Act allows the total allowable catch, ACE and allowances to be increased.

³ *Ministry of Fisheries (2007). Report from the Fisheries Assessment Plenary, May 2007: stock assessments and yield estimates. Ministry of Fisheries, Wellington, New Zealand.*

22 The baseline TAC is set at 48 tonnes meatweight, and is assigned as follows:

Table 1: Total allowable catch and allowances for Coromandel scallops (tonnes meatweight)

	Total allowable catch	Recreational allowance	Customary allowance	Allowance for other sources of mortality	Total allowable commercial catch
Coromandel scallops	48 tonnes	7.5 tonnes	7.5 tonnes	11 tonnes	22 tonnes

23 The annual review process normally is initiated when the Coromandel Scallop Fishermen’s Association (CSFA) informs MFish that it will support a biomass survey for a particular year. If the biomass assessment indicates that the fishery can support a greater harvest than the baseline TAC, MFish seeks the views of the CSFA, the New Zealand Recreational Fishing Council and ECO as to the level of increase each group would support⁴. MFish then develops management options within an Initial Position Paper and seeks submissions from interested parties through formal public consultation. Once submissions have been received, MFish drafts a Final Advice Paper advising you of the management options available and the views of submitters. You are then asked to make a decision which is effected by a notice in the *New Zealand Gazette*. An outline of the in-season review process is given in Figure 2 of the IPP (attached in Appendix 1).

Biomass Survey

24 Since 1978, biomass surveys have been used to estimate the abundance of scallops in the Coromandel scallop fishery. Yield estimates derived from these surveys have been used to set limits on catch (including the TAC, ACE, and allowances) for the fishery.

25 A biomass survey was undertaken by NIWA in May 2008 to assess the Coromandel fishery. Commercial beds adjacent to Little Barrier Island, Colville, Mercury Bay, Waihi and Papamoa were surveyed, with Waiheke Island and the northern part of Colville not surveyed this year.

26 Scallops were counted at each survey site and converted into numbers per square metre of seabed. The absolute density of scallops is estimated by correcting for the efficiency of the dredge. The number of scallops is calculated by multiplying the mean scallop density by the area of each survey stratum. Mean scallop meatweight is then estimated and used to calculate biomass.

27 The 2008 survey report by NIWA provides two current annual yield (CAY) estimates⁵ for the Coromandel fishery; one including putative habitat effects

⁴ This “pre-consultation” allows readers of the IPP to see the views of several of the major groups involved in the fishery.

⁵ ‘CAY’ is an estimate of sustainable catches from a fishery. It is based on the concept of harvesting the same proportion of the total scallop population every year (i.e. of total biomass - which refers to the total weight of fish in the population). Because scallop numbers can change significantly from year to year, the CAY estimate may be different each year. For the Coromandel scallop fishery, biomass surveys are done every year to give us this information. Matching catches to the CAY estimate each year is one way of ensuring that, over time, the stock stays at or above the biomass level that can support the maximum sustainable yield.

and one excluding these effects. If the putative effects of habitat modification caused by dredging on juvenile survival are included, the median CAY estimate is 189 tonnes (meatweight). If these effects are excluded (as has been the practice in recent years), the median CAY estimate is 276 tonnes (meatweight) (see table 2). Both these estimates assume that factors such as scallop growth, mortality, dredge efficiency and greenweight to meatweight conversion rates will be in line with the averages recorded over recent years in the fishery. The results of the NIWA report, including a comparison between the numbers of scallops greater than 95mm over the years 1990–2007 (Table 4), are summarised in the IPP.

- 28 The 2008 survey of commercial scallop beds in the Coromandel fishery estimates an 18% decrease in scallop biomass at time of survey compared with the same time last year. As the harvest strategy for this fishery involves taking a constant proportion of available biomass, the CAY estimate derived from this year's biomass estimate has also decreased 18% from last year's estimate. However, the Mercury Islands area which comprises the mainstay of the fishery (accounting for ~80% of commercial catches during 2007) is estimated to hold approximately the same biomass level at the time of this year's survey as it did at the same time in 2007.
- 29 As with all biomass surveys, there is a degree of uncertainty associated with survey results and actual biomass and CAY may differ from that estimated. MFish believes this uncertainty, often ignored, is best communicated using a risk-based approach, calculating the likelihood that each of the two yield estimates would be exceeded for a given catch limit. For a commercial catch limit of 95 t, the chances that either the CAY estimate excluding habitat effects or the estimate including habitat effects would exceed the true CAY are both less than 1% (see table 2).
- 30 A major cohort of sub-legal scallops was recorded by the survey. It is reasonable to expect many of these scallops (most currently sized around 75mm) will be recruited to the fishery during the season, and those that are projected to reach 90mm by July 15 are included in the CAY estimate. It is also worth noting that due to the current average size of the cohort (~75mm), only a small proportion of this cohort is actually included in the CAY estimate. It is likely that at least some of the remainder of this cohort will recruit to the fishery during the season.

The other common way of trying to achieve that goal (i.e. managing a stock at or above the level that can produce maximum sustainable yield) is to set a constant catch that in theory can be taken in any given year, and over time will maintain the stock around the target level (with fluctuations). This is how most of New Zealand's finfish fisheries are managed. However, due to the natural ups and downs of scallop populations, the *constant* catch that could be safely harvested *every year* would be close to zero. This is because in years in which scallop numbers are naturally low (e.g. because of environmental conditions), only a very small amount can be harvested without reducing the ability of the population to recover over a reasonable timeframe.

For scallops, although 'CAY' is an estimate of what can be sustainably taken from the fishery in a given year, research also indicates there are benefits to fishing more conservatively than this. In particular, the fishery could be more stable, with less risk of scallop numbers dropping below desirable levels. There are also other potential benefits, including higher catch rates, bigger fish, less fishing effort (lower costs), and lower environmental damage.

Table 2: Evaluation of the ‘risk’ of exceeding CAY given a variety of alternative catch limits. CAY was estimated using two approaches: excluding and including putative habitat effects. At present, MFish uses the CAY estimate which excludes putative habitat effects for management.

Potential ACE for 2008-09 (t meatweight)	Probability of exceeding the ‘true’ CAY	
	Excluding habitat effects	Including habitat effects
275	0.492	0.899
250	0.373	0.827
225	0.246	0.717
200	0.144	0.574
175	0.080	0.398
150	0.022	0.221
125	0.003	0.103
100	0.001	0.021

Consultation

- 31 Your decision whether or not to increase the TAC and ACE for SCACS is a decision under section 13(7) of the Act and therefore the consultation requirements of s12 of the Act apply.
- 32 The principles of consultation, now widely accepted, are:
- a) consultation is not to be equated with ‘negotiation’. ‘Consultation’ may occur without those consulted agreeing with the outcome;
 - b) consultation is the statement of a proposal not yet fully decided on;
 - c) consultation includes listening to what others have to say and considering the responses;
 - d) the consultative process must be genuine and not a sham;
 - e) sufficient time for consultation must be allowed;
 - f) the party obliged to consult must provide enough information to enable the person consulted to be adequately informed so as to be able to make intelligent and useful responses; and
 - g) the party obliged to consult must keep an open mind and be ready to change and even start afresh.
- 33 Consultation on the IPP was undertaken with such persons or organisations representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Maori, environmental, commercial, and recreational interests.

Submissions received

- 34 Six written submissions were received from: the Seafood Industry Council (SeaFIC); Whangamata Seafoods; Karl Aislabie; Mark and Lorraine Aislabie; the New Zealand Recreational Fishing Council (NZRFC); and Piako Underwater Club. The submissions are summarised below, and copies of those submissions can be found in full in Appendix 2.

Submissions from commercial stakeholders

- 35 The **New Zealand Seafood Industry Council** (SeaFIC) submission is made on behalf of the commercial seafood industry. The submission is based upon discussions with the Coromandel Scallop Fishermen's Association, and is supported by the Association.
- 36 SeaFIC supports option two and specifically supports the Coromandel Scallop Fishermen's Association proposal for an increase to 95 tonnes ACE, describing this proposal as consistent with the respectful approach agreed to in the draft fish plan. SeaFIC maintains that this increase is justified given the results of the stock assessment survey and NIWA's risk assessment graph showing that commercial landings of 95 tonnes present a less than 1% chance of exceeding the sustainable yield.
- 37 SeaFIC notes the importance of making in-season ACE increases available in a timely manner to facilitate utilisation during the current year's season, and it recognises the efforts of MFish to effect this.
- 38 While SeaFIC supports the proposed in-season ACE increase to 95 tonnes, it does not support option 1 (specifically, the proposal to increase non-commercial allowances) on the following grounds:
- there is variation between beds and no basis to assume that the stock on recreational beds has increased in the same proportion as on commercial beds;
 - increases for commercial catch have been informed by rigorous surveys and similar surveys of recreational areas are needed before making increases to that sector's allowances;
 - recent changes to the recreational fishing rules for scallops have provided for a large increase in the scallops available to recreational fishers, and the effects of those changes should be monitored before contemplating further changes;
 - monitoring and control of recreational fisheries are still inadequate, and making uninformed changes to allowances might reduce incentives to improve in this area;
 - it cannot be determined if the current non-commercial allowances are caught.
- 39 **Whangamata Seafoods** notes that it has been a quota holder and processor in the fishery for 31 years, and holds 34% of ACE in the fishery. It supports

option 1 as described in the IPP. Whangamata Seafoods' submission is supported by the Coromandel Scallop Fishermen's Association.

- 40 Whangamata Seafoods argues that recreational catch has probably increased significantly in response to recent changes to the recreational regulations allowing divers to collect for safety people and the shucking of scallops at sea. Moreover, it predicts recreational take will continue to increase with the change to the recreational season. Whangamata Seafoods feels these changes were made without supporting scientific evidence. The submission contrasts this with the process for setting the commercial catch limits, which are based on (generally) annual biomass surveys and yield estimates.
- 41 The submission notes that in contrast to the non-commercial sectors, the commercial sector is accountable for all its actions. Whangamata Seafoods also emphasises the cautious approach that commercial fishers have continued to follow this season, citing NIWA's cumulative frequency risk graph (see graph 1). This graph shows that when fishing at a level of 95 tonnes, the risk of exceeding the true sustainable yield is less than 0.1%.
- 42 Whangamata Seafoods' submission notes that commercial fishing allows the majority of New Zealanders who do not have access to the recreational fishery in SCACS to purchase scallops on the domestic market. The submission also calls attention to the benefits to the local economy from the processing of scallops from the Coromandel fishery, with 29 people employed and \$2 million injected into the local economy through Whangamata Seafoods activities alone.
- 43 Whangamata Seafoods also contends that the commercial and recreational fisheries are largely spatially separated, and argues that the best beds have been closed to commercial fishers. The submission notes that the five-day fishing week operating in the fishery allows time for commercial fishers to ensure their dredges are tuned to optimise their efficiency. The submission cites a NIWA survey which tested three dredge designs and concluded the box-dredge used by commercial fishers is the most efficient given the bathymetry of the Coromandel fishery. Whangamata Seafoods summarises the approach taken by commercial fishers as similar to that of a farmer working his field; if an area is producing undersize scallops or scallops in poor condition, fishers will move to another area.
- 44 Whangamata Seafoods supports the submission of Karl Aislabie.
- 45 **Mr Karl Aislabie** notes that he is a quota holder and skipper in the Coromandel scallop fishery, and has been involved in the fishery for 30 years. Mr Aislabie supports option 2 as described in the IPP. Mr Aislabie's submission is supported by the Coromandel Scallop Fishermen's Association.
- 46 Mr Aislabie notes that while the NIWA survey of the commercial areas provides scientific information on the quantity of scallops available for harvest, the recreational catch remains unknown.

- 47 Mr Aislabie also notes that SCACS is currently on an upward turn, especially when compared to the years of the ‘black gill’ disease outbreak and the tube worm infestation (approximately 1999–2001). He points out that commercial fishers have consistently taken well below the level the yield estimates suggest is available, instead opting for cautious catch levels. Mr Aislabie makes many of the same points about the 5-day fishing week, the efficiency of the dredges, the benefits of scallop fishing and processing to the local economy and the spatially-separate nature of the commercial and non-commercial fisheries as argued in Whangamata Seafoods’ submission.
- 48 Mr Aislabie provided a background paragraph on the history of the fishery, describing the consolidation of the fishery from up to 80 boats to seven at present. In addition, paragraphs on recent changes to the recreational scallop regulations and the commercial view of the fishery are also provided. These views do not directly address the IPP proposals, but they are provided with the full submissions (Appendix 2) for your information.
- 49 **Mark and Lorraine Aislabie** submit that they are stakeholders in the Coromandel Scallop fishery. They note that they fully support Karl Aislabie’s submission (above) and recommend option 2 as described in the IPP for the 2008–09 fishing season.

Submissions from recreational fishers

- 50 The **New Zealand Recreational Fishing Council (NZRFC)** has expanded upon its preliminary comments to MFish (shown in the IPP) with a formal submission. It argues that as commercial fishers only caught an estimated 59 out of an available 108 tonnes last year and in the context of an 18% drop in estimated biomass, that only 50 tonnes (meatweight) of ACE should be made available to commercial fishers for the 2008–09 fishing year. However, it does state that this limit could increase if a mid-season meeting between MFish and commercial and recreational fishers agrees that extra scallops are available.
- 51 The NZRFC maintains that there has always been strong recreational involvement in the Coromandel scallop fishery; involvement it claims predates the establishment of a commercial fishery in the late 1960s. It also claims that the intrinsic values derived by non-commercial fishers in the Coromandel fishery exceed the \$14.69 per meatweight kilogram paid to commercial fishermen.
- 52 The NZRFC asserts that the TAC in SCACS should be set at a conservative level, with the allowances for non-commercial fishing, illegal fishing and other sources of mortality set at levels that represent the worst case scenarios before setting the TACC. The NZRFC further claims that all decisions must be made to ensure the SCACS fishery is managed above B_{MSY} .
- 53 The NZRFC considers that MFish must take an active role in environmental protection, especially in terms of pollution from urban areas affecting the coastal marine area. It argues that MFish should be a “constant lobby force to local authorities and any RMA process effecting coastal land development.”

- 54 A major concern expressed by the NZRFC relates to the dredges used by commercial fishers in SCACS. The NZRFC claims that commercial scallop fishers in SCACS have not done sufficient research into improving the efficiency of their dredges nor into reducing the incidental mortality of scallops or environmental damage caused by dredging. The NZRFC asserts that incidental mortality of scallops is as high as two scallops killed for every one scallop captured.
- 55 The NZRFC argues that commercial fishers have a moral and legal obligation to reduce the incidental mortality and environmental damage associated with the use of dredges. It states that until MFish takes a “hard line conservative approach”, there will be no incentive for commercial fishers to improve their dredge design.
- 56 The NZRFC also expresses concern for the Papamoa Papa Reef System (near Motiti Island), both in terms of damage to the seabed caused by dredging in this area and in terms of scallop abundance in the area. While the NZRFC notes that this area has not been dredged for several seasons, it argues that the scallop beds in this area are yet to recover. Some members of the NZRFC quoted in the submission advocate for a ban on dredging to protect this area.
- 57 The NZRFC expresses its general support towards the current cautious management approach in SCACS. Specifically, it supports the pre-season assessment process and the baseline TAC, TACC and allowances and sees no reason to change this approach. The NZRFC is also broadly supportive of the management measures regulating recreational fishing in SCACS, believing the commercial exclusion zones and seasonal restrictions to be appropriate.
- 58 The NZRFC proposes that if commercial fishers were to be limited to 50 tonnes (as recommended in its submission), it would support the recreational bag limit remaining at 20 per fisher per day. It argues that this approach would be consistent with its commitment to conservative management and to the stabilisation and rebuilding of the SCACS fishery. However, if commercial fishers are awarded the full 95 tonnes they have sought, the NZRFC argues that the recreational bag limit must increase from 20 to 30 scallops per fisher per day.
- 59 The NZRFC considers that an allowance of 10 tonnes substantially underestimates recreational catch in SCACS. The NZRFC has again provided an interesting methodology for estimating recreational harvest in the Coromandel fishery. This methodology calculates that the 2007 recreational allowance of 10 tonnes equates to 27 500 daily bag limits. It then describes a hypothetical situation with 1 000 fishers fishing 100 times each during the season, with each catching their bag limit on every occasion giving a total of 100 000 bag limits caught during the seven month season. The 27 500 bag limits allowed for in the recreational allowance are then subtracted from the 100 000 bag limits, leaving 72 500 bag limits unaccounted for in this scenario. According to the NZRFC’s methodology, the recreational allowance should be set at 26.3 tonnes to cover for recreational harvest in this scenario.

- 60 The NZRFC advocates for an increase in the non-commercial allowances to 20 tonnes each. However, it notes that such increases are semantic as the sector catches what it catches. It notes that there is a degree of uncertainty in recreational catch in SCACS and that catch is likely to vary from year to year depending on catch per unit effort, climatic conditions during the open season, and the condition of scallops.
- 61 The NZRFC is concerned with the unexplained 18% reduction in biomass estimate in SCACS in 2008 (compared with the 2007 estimate). While unsure of the reasons for this reduction, NZRFC submits that in order to maintain a conservative management approach in the fishery, a corresponding reduction in the amount of any ACE increase is required.
- 62 The NZRFC states that the unavailability of robust data on recreational fishing areas and recreational catch levels is unacceptable. It argues that the recreational allowance of 7.5 tonnes is an underestimate and questions what MFish is doing to improve estimates of non-commercial catch. However, it believes that the state of commercial beds (as described by the pre-season survey) closely represents the state of non-commercial beds, especially where these beds are adjacent. It argues that while there is uncertainty about whether or not the areas closed to commercial fishing are “reseeded” by beds in the commercial fishery, a precautionary approach would assume at least some linkage between commercial and non-commercial beds. This, it claims, should ensure good distribution and spat fall in non-commercial areas as well as the sustainability of the fishery as a whole.
- 63 The NZRFC also make several comments that do not directly address the in-season TAC review. These include the NZRFC’s opinion that commercial fishery in Coromandel scallops is a “boutique” fishery with “limited commercial viability”, its opinion that the commercial sector has been reluctant in engaging in the fisheries planning process recently and its belief that the recreational daily bag limit should increase. MFish notes that this paper is concerned with whether or not there should be an in-season increase in the ACE and allowances for the Coromandel fishery. The bag limit issue therefore falls outside the scope of this paper, and should be pursued either through the review of recreational regulations or the fisheries planning process. The NZRFC’s submission is attached for your information in Appendix 2.
- 64 The **Piako Underwater Club (PUC)** discussed the proposal to increase the TAC of SCACS at its monthly meeting and notes that it does not support either of the options proposed by MFish.
- 65 The club has concerns with increases to any sector’s allowances or catch entitlement when the estimated fishery biomass has dropped by 18%, noting that Table 4 in the IPP provides no rationale for any increase. It argues that there should be no increase to catch limits unless there is an increase in fishery biomass.
- 66 The club notes that some of its members found scallops difficult to harvest in the 2007–08 fishing year.

MFish discussion

Determining the TAC

- 67 MFish notes that there is no current assessment of the entire stock on which to base a TAC. The primary assessment information available relates to those parts of the stock that are open to both commercial and non-commercial fishers.⁶ The available estimates of biomass and current annual yield (CAY) are derived from surveys of areas primarily utilised by commercial fishing. The estimate of CAY is a valid reference for informing the sustainable level of commercial catch under the TAC, which under the provision of s 13(7) of the Act provides for generating additional ACE within the season.
- 68 The proposed TAC options are composites of the respective stakeholder sector groups' catch allowances, plus any fishing-related mortality that can be assessed for the commercial fishery. The incidental mortality arising from commercial fishing is accounted for in the stock assessment and in determining the CAY estimate, and therefore can be added to the CAY to contribute to the TAC. MFish considers that the allowances for other sources of fishing-related mortality and for non-commercial fishing can be safely added to the baseline TACC, plus any additional ACE that might be allocated in the fishery within the season, to form the basis of the TAC.
- 69 MFish considers that both proposed TAC options are at cautious levels with respect to the estimate of CAY from the beds open to commercial fishing (with ACE and non-commercial allowances combining to less than 50% of the yield estimate under either option). NIWA calculates that the level of risk that either of the two options will exceed sustainable levels (the true sustainable yield) is less than 0.1% (see table 2). MFish considers that there is effectively no difference in the level of risk between the two options from the perspective of overall stock management.

Level of ACE for commercial fishing

- 70 MFish notes that stakeholder groups that made submissions were of different opinions regarding the proposals to increase the in-season ACE to 95 tonnes. While all four commercial stakeholders supported the proposed ACE increase, both recreational submitters felt the level of the proposed ACE increase was too high.
- 71 In response to concerns regarding the extent of the proposed in-season ACE increase, MFish provides the following discussion:

Taking into account the biomass decline

- 72 MFish notes submissions pointing out that the 2008 biomass estimate was 18% less than the same estimate in 2007. The NZRFC also points out that the 2007 estimate was itself 30% lower than the 2006 estimate. The NZRFC

⁶ While there is an on-going research project (SCA2007/03) to establish baseline abundance data from key scallop beds in the Coromandel (and Northland) scallop fishery, these data are not sufficient to estimate total abundance in recreational areas or to infer yield estimates from these areas.

argues that this decrease mandates a similar reduction in the level of in-season ACE made available to commercial fishers.

- 73 Variability in recruitment is known to be an inherent part of scallop population dynamics and is thought to be strongly linked to environmental conditions, such as the availability of food, sea temperature, prevailing weather patterns etc. However, it is still nearly impossible to predict or definitively explain changes in the abundance of scallops. This is why the Coromandel scallop fishery is managed as a Second Schedule stock.
- 74 MFish notes that, although the 2008 biomass estimate is lower than the previous year, it is still relatively high compared with historical biomass records. Consistent trends should not be expected in scallops because their recruitment and growth varies so much between years (and areas). Two years of declining biomass is by no means abnormal in a scallop stock, and the decline seen in the biomass estimates from 2006 to 2008 in the Coromandel fishery could have occurred even if there had been no fishing.
- 75 The best estimate of the single-year MSY for a fishery such as SCACS is provided by the CAY, which is estimated as a constant proportion of the available biomass in any given year. As such, the yield estimate provided by NIWA for 2008 already reflects the decline in biomass from 2007 to 2008. The best estimate of the CAY from beds open to commercial fishing for 2008 is 276 tonnes (using the same assumptions about scallop growth, mortality etc that have formed the basis of management proposals in recent years)⁷. Given that the equivalent CAY estimate for 2007 was 338 tonnes, the 2008 estimate of 276 tonnes approximates to a reduction of 18 %.
- 76 Piako Underwater Club argues that there should be no increase to either ACE or allowances until there is an increase in the underlying biomass of the fishery. It cites table 4 in the IPP (appended to this paper) as showing no reason for an increase in the TAC this year. MFish notes that while there was an estimated 18% decrease in the biomass relative to last year, the 95 tonne ACE level proposed in the IPP is substantially less than the 2008 yield estimate of 276 tonnes. Table 4 in the IPP shows the abundance of scallops 95mm and larger. As noted earlier, if scallops sized between 90-95mm are included, the key Mercury Islands area is estimated to hold approximately the same biomass level at the time of this year's survey as it did at the same time in 2007.
- 77 MFish reiterates that a decline in biomass is to be expected in scallop populations, and is not necessarily in of itself sufficient reason to restrict fishing to baseline levels. As the pre-season biomass survey estimates that a harvest level of up to 276 tonnes would be sustainable, MFish is satisfied that an ACE level of 95 tonnes is an inherently cautious and appropriate commercial catch limit.

⁷ NIWA actually provides MFish with two CAY estimates; one which accounts for the direct effects of dredging on scallops encountered by the dredge *and* the putative effects of dredging on scallop habitat and the consequent effects this might have on juvenile survival, growth and recruitment and one which only includes the direct effects. MFish uses the latter estimate, but provides the estimate *including* putative habitat effects for your reference.

The need for caution in setting the TAC and ACE increase

- 78 The surveyed biomass and estimated yields for 2008 were derived not from the entire productive area of the SCACS fishery, but from only the beds primarily used by commercial fishers, (though these beds are also open to non-commercial fishers). It seems reasonable, therefore, to conclude that additional biomass and yield will be available from the non-commercial areas of the fishery not included in the survey. A point of note, however, is that the estimates are for recruited biomass of scallops greater than 90 mm, which is the size limit applying to the commercial fishery. The recreational minimum size is 100 mm. Although this will have some effect on the yield available to non-commercial fishers in the surveyed areas, MFish considers that the survey estimates of biomass and yield are inherently cautious if considered as estimates for the overall stock, in the absence of estimates for the non-commercial beds.
- 79 MFish considers that the TAC for Coromandel scallops could be increased to the level of the CAY estimate while satisfying the sustainability obligations under s 13. Under this scenario, the TAC would be set at a level that by definition, will move the stock towards or above the level that will produce the MSY. Setting the TAC at a level substantially less than the CAY represents a more cautious approach, and constitutes a decision under s 13(2)(a) that would be likely to maintain stock size above that which can produce the MSY, consistent with some submitters' views that the fishery should be managed above the B_{MSY} level.
- 80 MFish notes the submissions from the two recreational parties suggesting that the proposed increase in ACE is too high. While those submitters noted the need for cautious management as the rationale for their views, they did not provide any analysis of how their proposals related to the research-based information on yield for 2008. MFish considers that the proposed ACE increase to 95 tonnes is already a very cautious approach, involving the harvest of only 34% of the CAY.
- 81 The NZRFC argues that ACE should be increased to only 50 tonnes, with the potential for an increase if a mid-season meeting of MFish, recreational and commercial fishers agrees that further yield is available. MFish believes that all the necessary information to support a commercial catch limit of 95 tonnes is present in the 2008 biomass survey report. MFish considers that a mid-season meeting to discuss a further increase to ACE would introduce undue uncertainty and delay to the in-season review process, and notes that this option has been investigated in the past. Fishery Assessment Report 2001/8 describes that data available mid-season (commercial catch per unit effort data) were not reliable indicators of biomass, even after grooming and extensive analysis. Regardless, MFish considers a mid-season meeting is unnecessary when the information already available from the pre-season survey indicates that the level of risk of exceeding the sustainable limit when harvesting 95 tonnes is less than 0.1%.
- 82 Similarly, MFish disagrees with the NZRFC's assertion that the commercial under-catch in 2007 is a reason to limit commercial fishers to 50 tonnes of

ACE. Commercial fishers caught only 59 out of an available 108 tonnes last year, however, as stated in the IPP, commercial fishers have explained to MFish that this was due to two factors. Firstly, an unusually high number of easterly storms impacted on scallop condition and reduced the number of days commercial fishers were able to go fishing. Fishers note that they will regularly stop fishing until scallop condition improves as it is often not worthwhile to fish while scallop condition is poor. Secondly, commercial fishers were concerned at the high number of juvenile scallops being brought up in dredges later in the season. These fishers have indicated to MFish that they made a decision to protect this cohort of juvenile scallops from being damaged by dredges in order that they could be harvested the following year as legal scallops.⁸ These fishers stress that while they could have caught up to or near the level of available ACE (even though they had fewer fishing days available due to bad weather) they deliberately chose not to in order to safeguard the following season. MFish congratulates commercial fishers on this responsible management decision, and notes that reducing the TAC because of last year's under-catch could dissuade fishers from taking such responsible action in the future.

Basis for the proposed in-season ACE increase

- 83 MFish notes that the consensus recommendation from the 2008 Annual General Meeting of the Coromandel Scallop Fishermen's Association (CSFA) was to increase the ACE to 94.5 tonnes. The CSFA has stressed that the commercial quota-holders are again taking a particularly cautious and responsible attitude towards increasing ACE. Quota holders have stated their preference to take a conservative management approach due to the high natural variability of the scallop population and a desire to improve the stability of catches over the long term. MFish recognises the cautious management approach again adopted by the CSFA. MFish reiterates that the proposal to increase ACE to 95 tonnes represents a very cautious approach at only 34 % of the 276 tonne CAY for the 2008–09 fishing year.

Implementation of ACE increase

- 84 As in previous years, stakeholders from the commercial sector have commented to MFish that the in-season review process introduces considerable uncertainty into business planning processes. They state that as additional ACE is not guaranteed until it is Gazetted as late as the end of August, it is difficult for processors to guarantee retail orders will be met, and difficult for fishers to budget for income and boat maintenance. Moreover, they note that as the 22 tonnes of baseline ACE can be fished very quickly, commercial fishers are either required to stop fishing, or to fish against deemed values, without any guarantee that the level of ACE they have sought (or indeed, any extra ACE) will be granted.

⁸ MFish notes that the biomass survey clearly shows a large cohort of scallops present throughout much of the fishery.

- 85 MFish is aware of the time constraints in this fishery, and endeavours each year to undertake the process without unnecessary delay, while observing all statutory obligations to consult. Through on-going work on the draft Coromandel Scallop Fishery Plan, other options for streamlining this process and introducing alternative management options are currently being explored.

Hauraki Gulf Marine Park Act

- 86 In setting a TAC, you are required under s 11(2)(c) of the Act to have regard to ss 7 and 8 of the Hauraki Gulf Marine Park Act 2000 in so far as the decision relates to the Hauraki Gulf. Section 7 recognises the national significance of the Hauraki Gulf including its capacity to provide for the relationship of tangata whenua and the social, economic, recreational, and cultural well-being of people and communities. Section 8 sets out the objectives of the management of the Hauraki Gulf, which include the maintenance of the Hauraki Gulf for the social and economic well-being and its contribution to the recreation and enjoyment of the people and communities of the Hauraki Gulf and New Zealand. The maintenance and enhancement of the physical resources of the Gulf, which include scallops, is also an objective.
- 87 The main commercial and non-commercial beds in the Coromandel scallop fishery all fall within the Hauraki Gulf Marine Park (the Marine Park).
- 88 MFish understands that, at present, all landings from the Coromandel scallop fishery are sold on the domestic market and that it is a popular species with consumers. The wellbeing of commercial scallop fishers and of consumers who would purchase commercially-caught scallops is likely to benefit from an in-season increase to the ACE available to them. The primary benefit from such an increase would be to allow these fishers and consumers to benefit from the relative scallop abundance this season. Given that the increase proposed would increase ACE from 22 to 95 tonnes, this is likely to have a significant effect on fishers' incomes and create temporary employment opportunities in processing sheds.
- 89 It is probable that the Coromandel scallop fishery is of considerable importance to the people of the Hauraki Gulf. MFish is aware of many recreationally-fished beds within the park (e.g. around Kawau Bay or Whitianga). While other beds are accessible outside the park (such as in Manukau Harbour or Bream Bay), it is likely that a significant number of recreational scallop fishers from within the Hauraki Gulf area derive wellbeing from this fishery.
- 90 As a species of considerable importance to recreational fishers, an increase in the allowances for recreational interests could better recognise the value of the Coromandel scallop fishery to the recreational sector and the wellbeing they derive from accessing this fishery. However, in the absence of information to suggest that the current allowances are insufficient for recreational and cultural wellbeing, MFish is not in a position to qualify or quantify the relative benefits of increases to the respective sectors.

Recreational allowance

- 91 There are several areas of the fishery (largely inshore embayments) that have been set aside by regulation exclusively for non-commercial fishing. The remaining areas of the fishery are not, however, exclusive to commercial fishers, but are open to all sectors. These are the areas surveyed to determine biomass and yield, hence MFish considers that it is reasonable to provide for non-commercial allowances under the CAY estimated from these areas that are open to all. MFish recognises, however, that available information suggests that there is relatively little fishing by non-commercial fishers in the areas open to all, possibly because of easier access to scallops in the areas closed to commercial fishers.
- 92 MFish notes that the Act does not expressly state the manner in which you must allow for interests in the fishery, or the factors to be taken into account when making these allowances and apportioning the TAC between different stakeholder groups. The allocation of the TAC is a matter for you to assess, taking into account relevant considerations. MFish believes that a relevant consideration is that the fishing sectors are spatially separate to a relatively large extent. Therefore, any yield assessed from the scallop beds primarily utilised by commercial fishing may be allocated largely to that sector. From a legal perspective there is no obligation to undertake a proportional adjustment to Maori customary, recreational or commercial interests when the TAC is varied for the purpose of ensuring sustainability.
- 93 Some submitters expressed the view that increases to recreational allowances should not be made until the recreational areas have been surveyed to provide estimates of abundance and yield there. They consider that there is little basis for assuming biomass changes on non-commercial beds are necessarily in the same proportion as on the surveyed commercial beds. The NZRFC, however, believes that scallop abundance in the non-commercial areas *is* likely to resemble abundance in those areas subject to the pre-season survey, especially where these areas are adjacent. It contends that depletion of one area could negatively impact on another area, and thus a cautious approach to management would assume some linkage between the surveyed areas and non-commercial beds.
- 94 MFish acknowledges that there is considerable uncertainty regarding the relationship between surveyed areas and non-commercial beds, but notes that a research programme began in 2006 to survey scallop abundance on the beds open only to non-commercial fishers. As the results of that programme become available, we will be better informed about the relationship between abundance in the different areas, and better able to inform management decisions. At this stage, however, the relationship remains undetermined and the extent of yield from those areas is unknown.
- 95 Some submitters commented on recent changes to the recreational fishing rules for scallops (i.e., the season change and the safety person bag limit and “shuck-at-sea” rules) which have provided for an increase in scallops available to recreational fishers, and suggested that the effects of those changes should be monitored before contemplating further changes. MFish agrees it is likely that catches for 2008–09 could exceed the baseline allowance of 7.5 tonnes.

The available biomass estimate is relatively high compared to the historical average, so an increased recreational catch could be attained due to a number of factors. Existing fishers might fish more frequently for scallops. If catch rates are good, there are likely to be more “new” and “occasional” fishers fishing for scallops. In addition, fishers might more frequently attain their full legal entitlement of scallops ie. the current daily bag limit of 20 scallops per fisher per day.

- 96 Some submitters also note that changes to the allowances should not be made without better estimates of catches by the non-commercial sectors. MFish notes that you are required to make allowances for recreational and customary Maori non-commercial interests in the fishery, using all the relevant information that is available. MFish considers that, in determining allowances, you should consider information about the interests of non-commercial fishers in the scallop fishery more broadly, rather than simply basing allowances on uncertain estimates of use.
- 97 MFish appreciates that the NZRFC again provided its methodology for estimating recreational catch in the Coromandel scallop fishery. While the harvest estimate it suggests might be plausible, MFish has no way of verifying this—or any other estimate of recreational catch—at the present time.
- 98 The NZRFC submission questions the accuracy of the 7.5 tonne baseline and asks what MFish is doing to improve on its understanding of recreational harvest in SCACS. At present, the results from the research surveys in 1996 and 2000 remain the best information available to MFish for estimating recreational catch in SCACS, and form the basis of the 7.5 tonne allowance. However, MFish notes that surveys of recreational beds are currently underway, and a pilot study (REC2007/11) estimating recreational scallop harvest from Cape Colville to Hot Water Beach began on 1 October 2007. These projects are expected to provide information with which MFish can set a more appropriate recreational allowance and better allow for changes in harvest between seasons. Further input and discussion through the fishery plan process will be important in this review.
- 99 Given the possibility that the recreational catch could be higher than the estimated 7.5 tonnes, MFish considers it could be reasonable to increase the recreational allowance to some extent. However, MFish does not have reliable information from which to gauge the extent of any potential increase. Last year, with a slightly higher estimate of abundance from the survey of commercially-fished beds, MFish proposed a likely realistic scenario of recreational catch increasing from 7.5 to 10 tonnes. Given that the biomass estimate this year is only 18% reduced from last year, similar logic suggests a comparable increase. Should you consider that there is sufficient evidence to support an increase in the recreational allowance; MFish proposes that it be increased from 7.5 to 10 tonnes meatweight. The recreational allowance would then revert to 7.5 tonnes meatweight at the end of the current fishing year for the Coromandel fishery (31 March 2008). However, should you feel there is insufficient information to increase the allowances this year, or that you would prefer to wait for the results of REC2007/1 and SCA2007/3 to inform any

future changes, MFish proposes that you retain the recreational allowance at its current level of 7.5 tonnes.

Maori Customary Non-commercial Allowance

- 100 While the IPP was distributed to stakeholders with a known interest in the Coromandel Scallop Fishery (including Maori organisations), MFish received only one submission which mentioned the customary allowance. The NZRFC noted that it should be raised (in conjunction with the recreational allowance) from 7.5 to 20 tonnes. MFish currently has no better information to inform the setting of the customary allowance than was used to set the original level. Using similar assumptions as for the recreational allowance, MFish proposes that you could increase the customary allowance from 7.5 to 10 tonnes if you agree that catch is likely to increase with the relatively high abundance of scallops in SCACS this year.

Environmental issues

- 101 Most of the submissions from the recreational sector raised the issue of the negative effects of dredging on the environment. Concerns included the incidental effects on localised scallop populations and effects to wider health and productivity of the benthic environment where dredging occurs. The NZRFC stated their understanding that two scallops are killed for every one scallop captured by the commercial dredges used in SCACS. The NZRFC also expressed its disappointment at the lack of research into reducing the impacts of dredging.
- 102 MFish recognises that commercial dredging can affect the growth and mortality rates of scallops, and might make scallops more vulnerable to predation. However, MFish notes that the incidental effects of dredging are expressly allowed for in the stock assessment model and other sources of mortality (OSM) allowance within the TAC. This allowance represents the extent to which dredging for scallops decreases the growth rate and increases mortality of those scallops either passing through the dredge or undersized scallops collected by the dredge, but subsequently returned to the sea. The allowance for OSM was calculated to be 34.4% of the level of commercial fishing *when harvesting at the level of the CAY*⁹, and will be less if harvesting below the CAY as proposed by commercial fishers this season.
- 103 In broad terms, an allowance of 34.4% of ACE means that over the whole of the SCACS fishery, for every three scallops taken by commercial dredge, the equivalent¹⁰ of approximately one additional scallop is killed, when fishing to the level of the CAY. Actual incidental mortality varies with fishing pressure,

⁹ Calculated by NIWA in 1997; recreational dredges were found to have a negligible effect on scallop mortality and growth rates (see Cryer, M., Morrison, M. (1997). Yield per recruit in northern commercial scallop fisheries: inferences from an individual-based population model and experimental estimates of incidental impacts on growth and survival. Final Research Report for Ministry of Fisheries project AKSC03. 32 p.

¹⁰ Scallops are not only killed by dredges, but can suffer non-lethal effects whereby their growth or reproductive capacity might be reduced for a period of time. The allowance for other sources of fishing-related mortality considers all these effects, and reference to scallops “killed” allows for all lethal and non-lethal effects to scallops as a result of dredging.

such that if a large proportion of the CAY is removed from one bed, incidental mortality in that area would be higher than 34.4%, due to the increased fishing pressure applied to that bed. However, incidental mortality in all other beds in the fishery would be reduced, due to the lower fishing pressure in these areas. When catch rates are particularly low and fishing pressure is high, incidental mortality can be as high as 100% i.e. for every one scallop taken, another is killed. This situation is rare, and only occurs when scallops are rare (such as during the period 1999-2000). MFish has no evidence to suggest that incidental mortality has ever approached the level of “two scallops killed for every one taken” (equating to an OSM allowance of 200%) as alleged by the NZRFC. Therefore, MFish uses the figure of 34.4% as the best estimate of incidental mortality across the whole of the SCACS fishery, though it will overestimate incidental mortality when harvesting at 34% of the CAY as proposed this year.

- 104 The use of commercial dredges is also thought to modify the benthic environment in which scallops are found. Two potential effects of this habitat modification are a reduction in the availability of surfaces upon which scallop spat can settle, and an increase in juvenile mortality. In recognition of this, NIWA provides an alternative CAY estimate from the beds open to commercial fishing that allows for the indirect “feedback” effects of habitat modification on juveniles. While this CAY estimate is not currently used to manage SCACS, you may wish to note that at 189 tonnes, it is still significantly larger than the proposed in-season ACE and allowance increase options for the 2007–08 fishing year.
- 105 The NZRFC submission commented that an incidental mortality level of 34.4% of the commercial catch is “unacceptably high”. MFish is satisfied that the total mortality from all types of fishing and all incidental effects of fishing are well accounted for within sustainable limits. As mentioned above, research by NIWA has provided a figure of 34.4% as the most accurate representation of the incidental effects of commercial dredging on scallops when fishing to the level of the CAY. Thus, for all in-season increases, this figure is used. However, MFish considers that a ratio of 50% is a more accurate estimator of incidental mortality at low biomass levels, when extra effort would generally need to be applied to catch available ACE. This is why it is used to calculate the baseline allowance for OSM. In years when biomass is high, an in-season increase is normally applied and the ratio of 34.4% is used to determine OSM for that fishing year from the overall ACE awarded that year.
- 106 The NZRFC submission refers to the desirability of further research into dredge design, with a view to increasing efficiency and decreasing incidental mortality and environmental effects in SCACS. Dredge efficiency trials (contracted by MFish) carried out in the Coromandel fishery in the mid 1990s indicated that the box dredge used in SCACS is thought to cause more environmental damage and higher incidental mortality for a single tow than other available dredges (such as the ‘ring-bag’ or the “keti ami” dredge types). However, the considerably higher efficiency of the box dredge on the harder, sandy surfaces typically fished in SCACS means that fewer tows are needed to catch the same quantity of scallops, and thus the overall area subject to dredging is reduced. Modelling suggests that the higher efficiency of the box dredge should more

than compensate for the rate of damage from each tow, making its use preferable to other dredge types.

- 107 MFish acknowledges that dredging has an effect on the benthic environment in parts of the Coromandel scallop fishery that are fished frequently. However, research has indicated that within the fishery boundaries, dredging affects only a modest proportion of most habitat types and large proportions remain undredged. The implications of dredging affecting a larger proportion of a few habitat types will be considered through the fisheries planning and MPA planning processes, contingent on the development of a benthic impact standard.
- 108 MFish is uncertain whether or not further research into the box dredge would result in modifications that might improve its efficiency and/or reduce its impact on the benthic environment, although a watching brief is being kept on novel designs being tested overseas. MFish believes that at the current cautious utilisation levels in SCACS, and with the incidental effects of dredging on scallops explicitly included in the TAC, the effects of commercial dredging on scallops and on the benthic environment are likely to be sustainable. This is another matter best explored through the fishery planning process, and to be integrated with the forthcoming benthic impact standard.
- 109 MFish has taken steps previously as information became available to indicate dredging was having an adverse effect on an area of special or significant biodiversity. MFish took steps to avoid, remedy, or mitigate the adverse effect identified at Spirits Bay in the Northland scallop fishery in the late 1990s. Research information indicated that dredging and trawling were likely to be having a significant adverse effect on the rare and endemic benthic biota only occurring in that area. Consequently, a large area at Spirits Bay and Tom Bowling Bay was closed by fisheries regulation to dredging and trawling. MFish notes that a benthic impact standard is being developed and will provide a reference for the determination of acceptable levels of impact in the near future.

Recent changes to rules regulating recreational access to SCACS

- 110 Many submitters refer to several recent changes to regulations which affect recreational access and use in SCACS. These submitters agree that these changes are likely to increase recreational catch in the fishery, though some commercial submitters question the rationale for these changes. MFish considers that the intent of the changes was not to allow for unconstrained catch, but to provide for better access and value to be realised by the recreational sector. Recreational catch remains constrained by two key measures which remain unchanged: the bag limit and the 100mm minimum size limit.

Commercial exclusion areas

- 111 The NZRFC submission advocated for the establishment of further areas closed to commercial scallop fishing in the Papamoa/Motiti area.

- 112 In contrast, several of the commercial submissions contend that most of the best areas for scallop fishing have already been closed to commercial fishing. MFish is not currently intending to close any further areas within SCACS to commercial fishing. Such proposals are more appropriately addressed through the fisheries planning and/or marine protected area planning processes.

Statutory Considerations

- a) **Sections 5(a) and 5(b):** There is a wide range of international obligations relating to fishing (including sustainability and utilisation of fishstocks and maintaining biodiversity). MFish considers issues arising under international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 are adequately addressed in the management options for this stock.
- b) **Section 8:** The management options ensure sustainability of the stock by setting the TAC at an appropriate level, informed by the best available information on in-season biomass and yield. Utilisation is provided for by way of setting allowances for commercial, recreational and customary fishers.
- c) **Sections 9(a) and 9(b):** Interactions between species have been identified, but there is no evidence that these interactions are of significant magnitude to impact on associated and dependent species, or on biological diversity.
- d) **Section 9(c):** No habitats of particular significance for fisheries management have been identified. On the basis of the available information, it is considered unlikely that the fishing method would have a demonstrable adverse effect on such habitats.
- e) **Section 10:** The information on the biomass and yield from the scientifically surveyed commercial beds is considered to provide the best available information on the status of the stock and its current annual yield. Although there is always some uncertainty associated with survey results, the results are considered to provide a sound basis for management decisions. It should be noted that the survey results for biomass and yield are likely to be underestimates, given that the important non-commercial beds were not included. It should also be noted that the best available scientific estimates of non-commercial catches are uncertain, both because of methodological problems and being based on surveys some time ago. Revised estimates are to be delivered in the near future.
- f) **Section 11(1):** Sustainability measures: Before setting or varying any sustainability measure, s 11(1) of the Act requires the Minister to take into account specified matters. These include:
 - i) any effects of fishing on any stock and the aquatic environment;

- ii) any existing controls that apply to the stock or area concerned;
- iii) the natural variation of the stock concerned.

The effects of fishing (e.g., those occurring through the use of dredges) are specifically allowed for in the management regime for SCACS and have been discussed throughout this paper. Existing controls in the SCACS fishery include the TAC, TACC and allowances, the commercial and recreational minimum legal sizes, the commercial and recreational season and the recreational bag limit. The natural variation of scallops in the SCACS stock is specifically allowed for through a range of management measures discussed throughout this paper.

Evaluation of the available information on the effects of fishing has led to a number of restrictions that underpin the existing commercial fishery management regime for SCACS. These restrictions are consistent with the overriding obligation to avoid, remedy or mitigate the adverse effects of fishing. They are implemented through a combination of regulations and voluntary agreement. The principal relevant controls in this fishery are:

- i) restrictions on dredge size to reduce adverse effects on the seafloor;
- ii) five day fishing week and daylight only fishing (reduces fishing intensity);
- iii) daily catch limits to reduce fishing intensity (Coromandel Scallop Fishers' Association voluntary initiative).

The management framework and proposed options recognise that biological systems can be inherently variable, and stocks are prone to fluctuations in abundance. This is particularly applicable to scallop populations.

- g) **Sections 11(2)(a) and 11(2)(b):** There are no provisions applicable to the coastal marine area known to exist in any policy statement or plan under the Resource Management Act 1991, or any management strategy or plan under the Conservation Act 1987, that are relevant to the setting or varying of any sustainability measure for this stock.
- h) **Section 11(2)(c):** Under section 11(2)(c) you must have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000. In summary, sections 7 and 8 articulate the national significance of the Hauraki Gulf to sustain the life-supporting capacity of the environment and note that management objectives for the Hauraki Gulf are to protect the life supporting capacity of the environment and to maintain the contribution of the natural resources to the social, recreational, and economic well-being

of the people and communities of the Hauraki Gulf and New Zealand. Setting a sustainable commercial catch limit on a fishery resource, having taken into account the environmental principles of the Act, is consistent with these objectives as it provides for utilisation while ensuring sustainability.

- i) **Sections 11(2A)(a) and 11(2A)(c):** The current fisheries service applying to the fishery is a pre-season survey to estimate CAY for the fishery. The survey estimate has been considered and forms the basis for the proposals contained in this paper. There are no conservation services applying to the fishery.
- j) **Section 11(2A)(b):** Currently, there is no approved fisheries plan for the Coromandel scallop fishery. However, the Ministry and stakeholder leaders are preparing a draft fisheries plan for this fishery. The draft plan has been provided to the public for information and discussion. The next stage will be to undertake formal statutory consultation with stakeholders and the general public.
- k) Section 13(2) requires the Minister to set a TAC that:
 - (a) Maintains the stock at or above a level that can produce the maximum sustainable yield (MSY) having regard to the interdependence of stocks; or
 - (b) Enables any stock that is currently below a level that can produce the MSY to be altered:
 - (i) in a way and at a rate that will result in the stock being restored to or above a level that can produce the MSY having regard to the interdependence of stocks; and
 - (ii) within a period appropriate to the stock having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or
 - (c) enables the level of any stock currently above the biomass that can produce the MSY to be altered in a way and at a rate that will result in the stock moving towards or above a level that can support the MSY.
- k) **Section 13(3)** requires that when considering the way in which and rate at which a stock is moved towards or above a level that can produce maximum sustainable yield the Minister shall have regard to such social, cultural, and economic factors as he or she considers relevant. The fishery is being managed at a level above the B_{MSY} in order to satisfy fishers' aims to achieve relatively high catch rates and stability in the fishery over time. Maintaining the biomass above B_{MSY} satisfies the known social, cultural and economic factors of importance to fishers.

- l) **Section 13(7):** Under section 13(7) of the Act, as SCACS is a stock listed in the Second Schedule to the Act, you may increase the TAC during the current fishing year after considering information about the stock abundance during the current fishing year and after having regard to the matters specified in sections 13(2) and 13(3) of the Act.
- m) **Section 68:** Under section 68 if the TAC is increased during a fishing year and the Minister believes that, after considering the matters referred to in section 21(1) he would have increased the TACC but for section 20(4), the Minister shall create additional ACE for the stock that equals the amount by which he would have increased the TACC. Section 21(1) relates to Maori customary non-commercial fishing interests, recreational interests, and all other mortality to that stock caused by fishing.

Recommendations

113 MFish recommends that you:

EITHER

Agree to Option 1 and:

- a) Increase the TAC for SCACS from 48 to 148 tonnes meatweight, and within the TAC:
 - i) Increase the allowance for recreational fishing from 7.5 tonnes meatweight to 10 tonnes meatweight;
 - ii) Increase the allowance for customary fishing from 7.5 tonnes meatweight to 10 tonnes meatweight;
 - iii) Increase the allowance for other sources of fishing-related mortality from 11 tonnes meatweight to 33 tonnes meatweight;
 - iv) Increase the ACE for quota owners from 22 tonnes meatweight to 95 tonnes meatweight; and
 - v) agree that at the end of the current fishing year for SCACS, the TAC will revert to 48 tonnes meatweight, the allowance for recreational fishing will revert to 7.5 tonnes meatweight, the allowance for customary fishing will revert to 7.5 tonnes meatweight, the allowance for other sources of fishing-related mortality will revert to 11 tonnes meatweight, and the ACE will revert to 22 tonnes meatweight.

OR

Agree to Option 2 and:

- b) increase the TAC for SCACS from 48 to 143 tonnes meatweight, and within the TAC:
 - i) retain the recreational fishing allowance at 7.5 tonnes meatweight;
 - ii) retain the customary fishing allowance at 7.5 tonnes meatweight;
 - iii) increase the allowance for other sources of fishing-related mortality from 11 tonnes meatweight to 33 tonnes meatweight;
 - iv) increase the ACE for quota owners from 22 tonnes meatweight to 95 tonnes meatweight; and
 - v) agree that at the end of the current fishing year for SCACS, the TAC will revert to 48 tonnes meatweight; the allowance for other sources of fishing-related mortality will revert to 11 tonnes meatweight, and the ACE will revert to 22 tonnes meatweight.

114 Depending on your preferred option, MFish recommends that you:

- a) **sign** the relevant attached *Gazette* Notice.

John Taunton-Clark
for Chief Executive
Ministry of Fisheries

AGREED / NOT AGREED / AGREED AS AMENDED

Jim Anderton
Minister of Fisheries

/ / 2008