



Ministry of  
**Fisheries**  
Te Tautiaki i nga tini a Tangaroa

## DRAFT FOR COMMENT

Draft Coromandel Scallop Fisheries Plan

May 2007



# Coromandel Scallop Fishery

## Draft Fisheries Plan

### *Introduction*

This draft fisheries plan for the Coromandel scallop fishery sets out objectives, describes how these will be achieved, what roles the Ministry of Fisheries (the Ministry) and stakeholders have to play, and how levels of achievement towards the objectives will be monitored. The aim of this approach is to bring more certainty for everybody involved in the utilisation and management of the Coromandel scallop fishery.

The development of this draft plan has to date involved discussions between representatives from the following stakeholder groups:

- Commercial quota holders and fishers;
- Te Ohu Kai Moana;
- Recreational fishers;
- Customary fishers (Ngati Manuhiri, Ngati Rehua, Ngati Hei, Ngati Paoa, Bay of Plenty Iwi Fisheries Forum Working Group, Ngatiwai Fishing Ltd);
- Environmental groups; and
- Interested community members.

Meetings were held initially with single-sector groups, to introduce stakeholders to the fisheries planning concept and help them to start thinking about their objectives for the fishery. Single-sector meetings occurred during October – December 2005 with most groups, and over a longer period with customary representatives from various hapu.

Since April 2006, seven multi-stakeholder meetings have also been held. The first meeting focused on documenting the management and status of the fishery at that time. Subsequent meetings concentrated on developing and refining fisheries objectives and management strategies, and reviewing the draft plan. Ministry science and compliance staff attended many of the meetings and provided technical expertise. Minutes of stakeholder meetings and drafts of the plan have been regularly posted on the Ministry of Fisheries website and emailed to stakeholders involved in plan development.

The Ministry and stakeholders worked on the following key steps to develop the plan:

- Documenting the current situation (stage 1) (Ministry-led);
- Developing management objectives (stage 2) (joint stakeholder meetings);
- Assessing the fishery against objectives (stage 3) (Ministry-led);
- Deciding on management measures and developing operational plan (stage 4) (Ministry-led, with discussions at stakeholder meetings).

**More Information:** The brochure and the Fisheries Plan Framework document on the Ministry of Fisheries website ([www.fish.govt.nz](http://www.fish.govt.nz)) provide more information on Fisheries Plans. Minutes of meetings can also be found on the Ministry of Fisheries website.

## Stage 1. Documenting the current situation

*“A naturally variable fishery, managed cautiously”*

### Fishery context

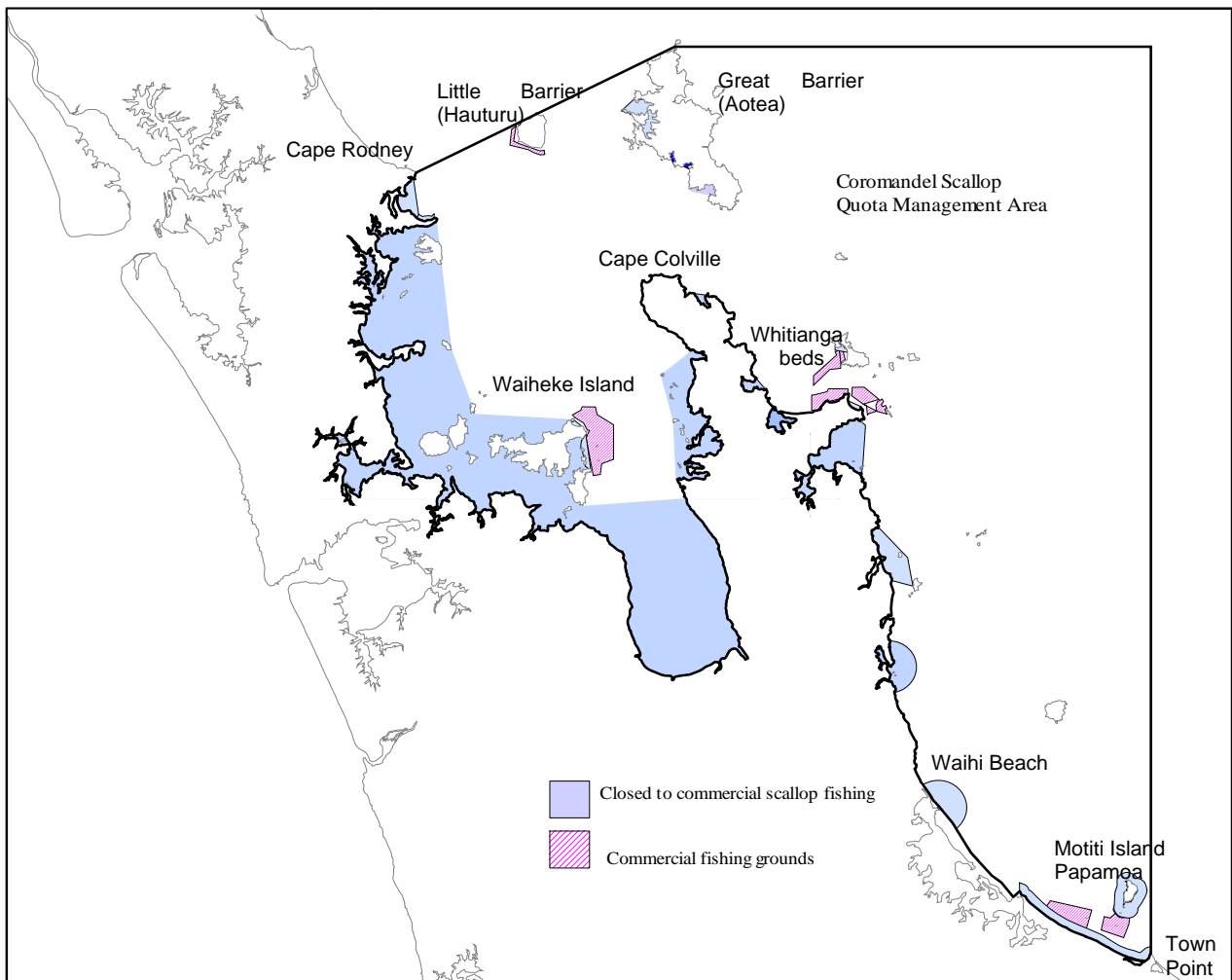
Scallops usually live in soft sediments on the sea floor. Although suitable scallop habitat occurs over much of the Coromandel Scallop Quota Management Area (SCACS), scallop distribution is patchy (**figure 1**). Juvenile and adult scallops are filter feeders that feed on microscopic particles called plankton in the water column. Availability of plankton in the water is very important to early survival of larval scallops.

At different stages of their life cycle, scallops are a food source for a variety of animals. Young scallops provide food for larval fish, and later hermit crabs and whelks. Larger scallops are eaten by starfish, octopus, and rock lobster. Juvenile scallops are also vulnerable to snapper predation, but this is likely to decline as the scallop increases in size and shell thickness.

Scallops have a number of biological characteristics that can contribute to marked fluctuations in population size from year to year. Such fluctuations are possible even if no fishing occurs (although the pattern of fishing effort is thought to contribute to how the population responds to such periods of low biomass – i.e. if it recovers quickly or slowly).

Most scallops are sexually mature at about 60 mm shell width, so have at least one spawning season before reaching the size limit (90 mm for commercial fishers in the Coromandel scallop fishery; 100 mm for recreational fishers). Both commercial and non-commercial fishing tend to be concentrated in specific areas within the fishery (**figure 1**).

**Figure 1: Boundary of the Coromandel scallop quota management area, areas closed to commercial scallop fishing, and the location of the main beds fished by commercial scallop fishers. Some commercial fishing has also occurred off Cape Colville and off Waihi Beach. Popular non-commercial fishing areas include many of the bays and harbours closed to commercial fishing.**



## Fishery characteristics

The Coromandel scallop fishery is a shared fishery, important to customary, recreational, and commercial fishers. The health of the ecosystem in which scallops are found is also important to environmental stakeholders and the community.

For Maori customary fishers, tipa (scallops) were traditionally gathered by a number of means: collected by hand by free-diving, hand gathering of “wash-ups” after a storm, and “walk-out” gathering in intertidal areas at low tide. Recreational fishing is dominated by diving from boats, using SCUBA. Some dredging also occurs. Commercial scallop fishing using dredges has been carried out around the Coromandel Peninsula and in the Hauraki Gulf since the late 1960s. Only a small number of boats (seven) are now involved in the commercial fishery.

Because scallop numbers can vary from year to year, a survey is done before the start of the season each year. The survey provides information on how many scallops are available to harvest, and is used as the basis to vary the commercial catch limit each year. The “baseline” total allowable catch is set at a low level (48 tonnes). Annual catch entitlements (ACE) can increase in years of high scallop abundance, through an in-season review process. There is currently no clear process to change non-commercial allowances or management controls within a season in response to high scallop biomass. Nonetheless, non-commercial catches are thought likely to increase in good years, as more people go out fishing, and more people catch their bag limit.

The current process for increasing the commercial catch limit in-season may be too slow in some years, or may be held up. This fisheries plan seeks to provide a means to streamline the process and allow commercial fishers to benefit more quickly from information about improved scallop biomass, while achieving longer term stability in the fishery. Equally, the fisheries plan should clarify how non-commercial fishers can benefit from improved scallop biomass in good years.

## Environmental considerations

Given the natural variability of scallop populations, the trophic impacts of current harvest levels for scallops are probably low. That is, flow-on effects on the ecosystem and other organisms (that either eat scallops, or are eaten by scallops) from removing a certain volume of scallops are considered to be low.

However, the commercial fishery, along with a small portion of the non-commercial fishery, uses dredges to harvest scallops. This method can kill scallops that are left on the seabed (called incidental mortality), and can impact on other plants and animals that live on the seabed. The Ministry is developing a ‘Benthic Impact Strategy’ to guide the development of standards and approaches to assessing to assess acceptable levels of environmental impact for fishing methods that impact on the seabed.

In this fishery, some measures are already in place to help mitigate these effects, including:

- Various areas in the Firth of Thames and inner Hauraki Gulf are closed to commercial dredging, although some recreational dredging may still occur;
- Currently, commercial dredging generally occurs in the same areas from year to year, so impacts of dredging are at present limited to those areas;
- The commercial season closes on December 21, which is before a large part of the spatfall for the season probably occurs (in late December/January);
- Studies have shown that the box dredge used is the most efficient of the options currently available for the commercial fishery.

Research commissioned during development of the fisheries plan provides some information on the different habitat types present in the fishery area; how vulnerable they are to dredging; and where fishing occurs in relation to different habitat types. Environmental stakeholders have noted it is difficult to develop specific environmental objectives in the absence of detailed information on the proposed standards for mitigating the impacts of fishing on the environment. When the Benthic Impact Strategy and standards have been introduced, the relevant parts of the plan will be reviewed.

There is also potential for voluntary measures to exceed baseline standards of environmental protection. For example, commercial fishers tend to avoid areas where horse mussels are present,

because such areas are not productive for scallops. However, horse mussels can provide valuable habitat for other species. Voluntary protection of such areas is one measure proposed in this plan.

**More Information:** The Information Brief attached as appendix 1 outlines the relevant biological, social, and management information for this fishery in more detail.

## ***Stage 2. Developing management objectives***

*“What are the goals and objectives for the Coromandel Scallop Fishery?”*

Setting out the desired management objectives for the Coromandel scallop fishery is a way of describing ‘*what we want from the Coromandel scallop fishery*’.

In doing so, the Ministry’s desired national outcome that is common to all New Zealand’s fisheries provides important guidance:

“The value New Zealanders obtain through the sustainable use of fisheries resources and protection of the aquatic environment is maximised.”

The Ministry and stakeholders identified management objectives at both strategic (goals) and operational levels (operational objectives) for the Coromandel fishery. These objectives are summarised in the table below (**Table 1**). The overall fisheries outcome has been recognised through development of 4 overall goals and 35 operational objectives.

One of the key areas of debate during development of the goals and objectives was in relation to the sustainability goal. There was general agreement amongst stakeholders that they wanted an approach that would help ensure stable harvests of scallops into the future. However, there was debate about the wording of the goal to reflect this approach, and the specific operational objectives required to achieve it. In particular, there was debate about whether the word *mauri* would be readily and consistently understood. The overall sustainability goal proposed in the plan is to “maintain the *mauri* and sustainability of the fishery with a cautious, respectful approach.” *Mauri* can be translated broadly as spirit or life force, and is intended to convey a holistic approach. The approach is broadly consistent with the Ministry’s focus in its Statement of Intent on protecting the health of the aquatic environment (rather than just fish species that we harvest). This can be seen as an overarching goal for the fishery, so some of the operational objectives outlined under other goals also help to achieve it.

**More Information:** More information on the National Fisheries Outcome can be found in the Ministry’s Statement of Intent (Ministry of Fisheries office or website ([www.fish.govt.nz](http://www.fish.govt.nz))).

**Table 1: Fisheries goals and objectives for the Coromandel scallop fishery**

**Fisheries outcome – the value New Zealanders obtain through the sustainable use of fisheries resources and protection of the aquatic environment is maximised**

Goals	Operational objectives
<p>A. Sustainability</p> <p>A1. Maintain the <i>mauri</i> and sustainability of the fishery with a cautious, respectful approach</p> <p><i>Mauri</i> – spirit, life force</p> <p>A2. Where possible, negative effects of the environment on the fishery are minimised</p> <p>A3. Minimise the impact of invasive marine organisms on the fishery</p>	<p>&gt; A1(i) Implement an overall harvest strategy that balances:</p> <ul style="list-style-type: none"> <li>- High catch rates; against</li> <li>- Risk of recruitment failure (including impact of dredging on recruitment success); and</li> <li>- Stability of fishery over time (i.e. minimises ‘boom/bust’ effects)</li> </ul> <hr/> <p>&gt; A1(ii) Ensure sustainability in years of low biomass. i.e. when a survey does not occur because biomass is suspected to be too low to justify it; or when surveyed biomass is less than that required to support the baseline TACC of 22 tonnes.</p> <hr/> <p>&gt; A1(iii) Manage areas of local depletion if necessary</p> <hr/> <p>&gt; A2(i) Understand how climatic conditions e.g. El Niño/La Niña affect the fishery</p> <hr/> <p>&gt; A2(ii) Manage impacts of starfish, tube worm, blackgill on fishery as much as possible</p> <hr/> <p>&gt; A3(i) Minimise the impact of invasive marine organisms on the fishery (where possible)</p>
<p>B. Environment</p> <p>B1. Avoid, remedy or mitigate adverse effects of scallop fishing on the environment</p> <p>B2. Ensure human environmental activity has no significant negative effects on the fishery</p>	<p>&gt; B1(i) Understand the environmental effects of scallop dredging and their significance</p> <hr/> <p>&gt; B1(ii) Implement measures to achieve standards for acceptable levels of environmental impact</p> <hr/> <p>&gt; B1(iii) Protect areas of special biodiversity or ecological significance from dredging</p> <hr/> <p>&gt; B1(iv) Use best practice fishing methods to minimise environmental impacts</p> <hr/> <p>&gt; B2(i) Understand effects of sedimentation, pollution, and runoff on scallop ecosystems</p> <hr/> <p>&gt; B2(ii) Combined advocacy amongst stakeholders to minimise impact of activities (e.g. development) that may harm scallop populations</p> <hr/> <p>&gt; B2(iii) Engage with resource management authorities.</p>
<p>C. Use</p> <p>C1. Develop ability of each sector to get best value from the fishery</p>	<p>&gt; C1(i) Develop utilisation strategy for commercial sector that balances*:</p> <ul style="list-style-type: none"> <li>- High catch rates; against</li> <li>- Risk of recruitment failure (including impact of dredging on recruitment success); and</li> <li>- Stability of fishery over time (i.e. minimises ‘boom/bust’ effects)</li> </ul> <hr/> <p>&gt; C1(ii) In-season annual catch entitlement increase occurs as quickly and efficiently as possible</p> <hr/> <p>&gt; C1(iii) Develop utilisation strategy for recreational sector that*:</p> <ul style="list-style-type: none"> <li>- Outlines fair access to the fishery (as controlled by bag limit, season, size limit);</li> <li>- Outlines what happens to recreational allowance if biomass is high enough for commercial catches to increase in-season; and</li> <li>- Outlines how recreational harvest pressure will be controlled as necessary</li> </ul> <hr/> <p>&gt; C1(iv) Develop utilisation strategy for customary sector in which*:</p> <ul style="list-style-type: none"> <li>- Tikanga and kawa regulate harvest;</li> <li>- Historical measures of catch rates and effort are used to regulate harvest;</li> <li>- Predictors such as seasonal cues are used;</li> <li>- Customary purposes are met (tangi and hui; papakāinga use; tribal obligations – manaaki); and</li> </ul>

- Mahinga mātaitai (harvest sites) are identified  
 \* Utilisation strategies for individual sectors to be developed/refined within those sector groups for discussion with the fisheries plan group.

- > C1(v) Identify and appropriately manage areas of particular significance to customary fishing
- > C1(vi) Avoid damage (from scallop dredging) to horse mussel beds that are important for customary fishing
- > C1(vii) Obtain better information on recreational and customary catch
- > C1(viii) Improve the level of compliance with fisheries regulations

C2. Reduce wastage of scallops

- > C2(i) Optimise use of existing dredges to minimise incidental mortality
- > C2(ii) Ensure fishers are using the best fishing method available to reduce incidental mortality
- > C2(iii) Size limit is optimal to reduce wastage
- > C2(iv) Ensure the regulation relating to harvest of scallop wash-ups on beaches provides for appropriate utilisation without jeopardising compliance

C3. Reduce the costs of commercial fishing

- > C3(i) Optimise scallop recovery rates
- > C3(ii) Avoid uneconomic competitive fishing
- > C3(iii) Ensure unit of measure (i.e. meatweight or greenweight) for fishery is optimal for maximising yield per scallop
- > C3(iv) Employ the most efficient dredge width and configuration available (while achieving environmental standards).

C4. Enhance the scallop fishery

- > C4(i) Investigate the legislative, scientific, and financial feasibility of implementing a large-scale scallop enhancement project

C5. Avoid local depletion

- > C5(i) Identify areas where local depletion is occurring
- > C5(ii) Develop and implement measures to manage local depletion

D. Credible Management

D1. Flexible approach to decision-making

- > D1(i) Flexible approach to decision-making
- > D1(ii) Evaluate costs/benefits of proposed management and research

D2. Public is well informed about the state of the fishery and how it is managed

- > D2(i) Sectors to gain better understanding of what's important to each other, and how the other sectors fish for scallops

D3. Stakeholders are involved in management of the fishery

- > D3(i) Multi-stakeholder group meets annually to review fisheries plan
- > D3(ii) All sector groups involved in development and monitoring of fisheries plan
- > D3(iii) Progress in meeting objectives is monitored and reported to the group

### ***Stage 3. Assessing the fishery***

*“Are we on track to meet these objectives ...?”*

Existing management is close to meeting many of the operational objectives. However, in some cases management could be streamlined or improved to better meet objectives. In other cases, the objective for management needs to be clarified further before changes can take place.

*“Is the fishery performing against standards?”*

Once national standards have been set, the management of the fishery will also be assessed against those standards. For any standard not met, the management strategy will incorporate measures that, over time, will lead to meeting those standards.

As noted, a benthic impact strategy and standard are being developed at present. Work is also currently underway on a harvest strategy standard that will be of relevance to this fishery. Consultation on the draft standard has occurred, and further development is now occurring.

<p><b>More Information:</b> Appendix 2 sets out in more detail an assessment of how the current management is performing.</p>
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### ***Stage 4. Management strategies***

*“...if not, what do we need to do?”*

The plan development group has looked for the most effective and efficient management actions to address the shortcomings identified in the assessment stage.

This draft fisheries plan focuses on the services that are directly required for, and of direct benefit to, the management of the Coromandel scallop fishery (rather than broader Ministry-wide services).

### ***Strategy to ensure sustainability / maintain the mauri of the fishery [Objectives A1(i)- (iii); C5]***

#### ***Assessment –***

The low baseline total allowable catch (TAC) is expected to ensure sustainability in most years. The low baseline TAC is complemented by other measures, including the timing and length of the commercial season (July to December, excluding main period of spatfall in January/February); and the commercial size limit at 90mm (close to optimal for long-term yield from fishery).

There is currently insufficient information about the biomass in non-commercial areas or the overall level of non-commercial harvest to assess how non-commercial harvest contributes to this objective for the stock. Surveys to assess biomass in non-commercial areas have begun.

Modelling work has shown that maintaining a “baseline TAC” (i.e., the current management arrangement) can decrease yield and increase biological risk, in comparison to strategies that harvest a constant portion of the available biomass, dropping to zero in low biomass years. The increased biological risk occurs only in years when biomass is low, but fishers continue to fish anyway. There is debate about whether that situation is likely in this fishery. In such years, fishing may be uneconomic, resulting in voluntary cessation of fishing.

Nonetheless, in years of very low scallop biomass, the existing TAC may pose a high level of biological risk to the stock if it were fully harvested. Two possible situations arise in which this is relevant – one where a survey is done that estimates sustainable harvests to be less than the baseline TAC; the other is where commercial stakeholders do not wish to fund a survey because they consider the biomass is likely too low to justify the expense of a survey.



The section of the Fisheries Act under which in-season increases to annual catch entitlements (ACE) occur does not provide for the TAC to be decreased during the season. However, the risk of not meeting this objective is assessed as low. At low biomass levels, the Ministry expects the commercial catch will be reduced to below the level of the baseline total allowable commercial catch (TACC) through voluntary measures (and economic factors).

Some stakeholders have raised concerns about the potential for local depletion of scallop beds, particularly in nearshore (non-commercial) areas. Non-commercial effort tends to decline when a bed starts to become depleted and catch rates are low. Information about low scallop abundance can be spread by word of mouth or through media articles. However, some non-commercial fishers may not get the message, or may continue to fish in depleted areas. Further, beds may recover more quickly if they are managed earlier rather than later. Ways of managing local depletion include through the use of customary tools such as temporary closures or *mātaitai*. Use of such tools may not always be appropriate, in which case other tools would need to be developed. This would be part of a broader policy review, not just because of a possible need in a single fishery.

A related concern is the potential for other organisms (whether exotic, or native, such as starfish) to impact on the scallop fishery. This concern is addressed under 'Strategy to manage within the environmental context of the scallop fishery' and 'biosecurity strategy'.

#### *Actions -*

- Manage areas of local depletion if necessary

#### *Monitor -*

- Fishery biomass and CAY (current annual yield) estimates in relation to baseline TAC<sup>1</sup>.
- The Ministry to record and assess significance of concerns about local depletion (fisheries plan group and wider stakeholders to report concerns to the Ministry)

### ***Strategy to avoid, remedy, or mitigate adverse effects of fishing on the environment [Objective B1]***

#### *Assessment -*

Full assessment of this objective depends on environmental impact standards currently being developed.

The total area fished commercially within the Coromandel scallop fishery has ranged from 350-450 km<sup>2</sup> through most of its history, but fell to about 200 km<sup>2</sup> in 2001 (very low scallop abundance, general downturn in fishery), and less than 100 km<sup>2</sup> in 2005 (very high scallop abundance). Although

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<sup>1</sup> '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**.

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.

overall fishing effort has declined, changes in the pattern of fishing have meant fishing intensity has fluctuated. Fishing intensity increased considerably for the Mercury area in 2005.

The percentage of each habitat type within the area fished varies between years, but certain sand and calcareous-sand habitats featured consistently in the fished area. Of the habitats identified with vulnerable bycatch species, two (occurring mostly in the Mercury area) had 23-35% of their area remaining unfished, while the other habitats had over 70% remaining unfished. The area between the Mercury Islands and Whangapoua Harbour appears likely to have been the most heavily fished. A number of habitats appear never to have been fished.

No areas of habitat containing particularly vulnerable or long-lived species are thought to be present in the main fishery areas less than 50m deep. Sediment areas surrounding deep reefs (>50m) around the offshore islands may contain vulnerable species and habitats.

For commercial fishing, data on where fishing occurs is currently only collected to the statistical reporting area scale. This makes it difficult to assess whether fishing is occurring in areas where it has already occurred in the past, or in new areas (that may contain rare or vulnerable species).

Existing research indicates the impact of recreational scallop dredging is minimal for scallop populations, but the effects on the broader environment were not considered in that study. Some stakeholders have expressed concern about the impact of recreational dredging. There is currently insufficient information to assess fully those concerns. Most recreational fishers are thought to dive rather than dredge, although the most recent information is from 2001.

Some tangata whenua were concerned about the effects of recreational dredging on horse mussels in Tauranga Harbour. Tauranga Harbour is outside of the Coromandel scallop quota management area, but this example indicates the need to consider impacts of non-commercial dredging in some areas.

#### *Actions -*

- Assess fishery against benthic impact standard when it is implemented.
- Commercial fishers agree to continue voluntary avoidance of horse mussel beds, and to educate any new fishers so they continue this fishing practice.
- Work towards identifying any areas of special diversity or ecological significance, using:
  - i. Existing information and local knowledge; or
  - ii. A specific research project.
- Work towards collecting spatially explicit information that would allow monitoring of the area covered by commercial fishing as portion of total fishery management area, and as portion of each habitat type.

#### *Monitor -*

- Bycatch of commercial fishery (part of survey of commercial beds, from May 2008; could also be collected by commercial fishers in a simple logbook – see biosecurity strategy below)
- Non-commercial fishing methods (anecdotal)

### ***Strategy to manage within the environmental context of the scallop fishery (objectives A2, B2)***

#### *Assessment –*

Environmental factors that influence scallop populations may include: climatic conditions, water temperatures, siltation/sedimentation; increased nutrient input from runoff; pollution.

Land uses such as construction work, forest clearance, agriculture, and subdivision result in increased suspended sediment in the water. Suspended sediments may affect coastal ecosystems in a number of ways, including smothering plants and animals on the sea floor; and transporting pollutants and (excess) nutrients.

The Ministry has not done research on the impacts of sediment on scallops. Studies on other shellfish including mussels, oysters, sponges, kina, and paua indicate a range of impacts. This is not currently a core focus for Ministry research, since the Ministry is not able to manage land use. However, the fisheries plan group was very interested in highlighting the possible impacts of land use on scallops.

We currently have a basic level of understanding of how El Niño/La Niña events contribute to scallop population variability between years. We have little understanding about why scallop abundance varies between areas – why are scallops more abundant in some areas compared to other areas? Research to gain a better understanding of the climatic effects is not a core fisheries research role that is funded by the Ministry at present.

#### *Actions –*

- Present finalised plan to Hauraki Gulf Forum (includes all local and regional authorities within Coromandel scallop fishery area), to highlight potential impacts of landuse on scallop populations, particularly to local authorities who control such landuse. Continue to work with Hauraki Gulf forum members to develop an integrated approach to management.
- Combined advocacy amongst stakeholders and tangata whenua to minimise the impact of activities that may harm scallop populations. Use regular fisheries plan group meetings as forum for discussing relevant development.
- Use Hauraki Gulf Forum contacts as appropriate to consolidate existing information sources (availability of and access to existing information).
- Ministry to provide fisheries plan to universities and other research institutes that are possible research providers on these topics.
- Stakeholders to investigate benefits of additional stakeholder-funded research.
- Discuss with commercial fishers the value of collecting time series of baseline environmental data (e.g. water quality, sea temperature). Guidelines would need to be developed for standard collection procedures.

#### *Monitor –*

- Climatic patterns (El Niño/La Niña) so that fishery managers are aware of possible patterns of scallop abundance (using existing information sources).

### ***Biosecurity strategy (objective A3)***

#### *Assessment –*

Overall responsibility for biosecurity lies with Biosecurity NZ.

Such species as starfish, tube worm, and the organism that causes blackgill may substantially impact on the viability of the Coromandel scallop fishery (note that some of these species are native rather than exotic species, so may technically not constitute a ‘biosecurity’ threat). Invertebrate species such as starfish and tubeworm naturally have highly variable population abundance cycles, probably driven by environmental or climatic factors. Heavily fished populations may be more vulnerable to invasive marine organisms than are populations that are fished conservatively.

Early warning of potential biosecurity problems is important for management. Fishers in the Foveaux Strait oyster fishery operate a basic logbook to collect information on bycatch species (including any non native species). Over time, collecting this information would help build up a picture of the habitat types present in the fishery, and would provide information to help identify location and distribution of any unwanted organisms.

Neither stakeholders nor the Ministry have a strategy to reduce the risk to the scallop population caused by outbreak of disease, or any rapid increase in predatory or competitive invertebrate species.

Some stakeholders were concerned the Ministry’s response to information about these problems has been slow in the past.

### *Actions –*

- The Ministry to present finalised fisheries plan to Biosecurity NZ
- Obtain abundance data on bycatch species such as starfish and tubeworm during the annual biomass survey. One of the objectives for the survey scheduled for 2008 is to assess the bycatch taken using photography, and to design a bycatch monitoring programme.
- Hold an urgent meeting – if required – to discuss/implement possible management measures if biosecurity concerns are raised with the Ministry. Action would depend on nature/extent of problem. Possible remedies include: voluntary area closures; cleaning dredges when moving between sites.
- Discuss logbook scheme with commercial fishers, based on similar approach in the Foveaux Strait oyster fishery.

### *Monitor –*

- Abundance data collected during surveys (bycatch monitoring programme to be developed as part of 2008 survey).
- Keep watching brief on other information sources (e.g. FORST funded research projects).

## ***Strategy to enable utilisation (objective C1):***

### ***(1) Set TAC for season based on pre-season survey***

#### *Assessment –*

The process for the biomass survey is well established. The survey occurs in May each year. Commercial fishers have suggested the survey could be made more efficient by doing a pre-survey qualitative assessment of scallop beds to assess which ones should be surveyed. This would currently require a special permit because it would occur outside of the scallop season (unless it occurred at the end of December).

The survey provides current annual yield (CAY) estimates for the beds that are surveyed (the main commercial beds) (see footnote 1 for further explanation of what a CAY estimate is). Several CAY estimates are provided, including an estimate that takes into account the impact of the fishing method on subsequent recruitment success. The latter estimate is seen as best meeting the objectives of the fishery, including the overall objective to “Maintain the *mauri* and sustainability of the fishery with a cautious, respectful approach.”

The TAC has in the past been set based on a portion of the CAY estimate nominated by commercial fishers. Non-commercial allowances may or may not alter as part of the in-season TAC increase.

Aspects of the in-season increase that need to be addressed are:

1. Ensure commercial fishers have timely access to the available yield as determined by the survey (at present there is lag time between baseline annual catch entitlements (ACE) having been fished, and in-season increases to ACE being made available).
2. Does in-season increase process fulfil the objectives of the non-commercial sector?
3. Does the amateur daily bag limit allow for best recreational use, especially in good years?

For all options, it is proposed to use the CAY estimate that takes into account the effect of dredging on recruitment success as the starting point. This estimate is more conservative than some of the other CAY estimates calculated.

### *Actions –*

- Pre-survey assessment to fine-tune survey: commercial fishers could undertake this at the end of the fishing season in December, or apply for a permit to carry out assessment closer to the survey date.
- Biomass survey of commercial beds – annual (May).

- Survey biomass of non-commercial beds and investigate relationship between biomass in commercial and non-commercial beds. First survey occurred in 2006; next scheduled for 1 October 2007. Options:
  - i. Regular surveys e.g. annual; or
  - ii. Do a few surveys to establish relationship between biomass in commercial and non-commercial beds.
- Obtain further information on recreational harvests: research project scheduled to start 1 July 2007. Some stakeholders have also expressed interest in involving the community in non-commercial research (such involvement would probably need to be limited to land based research e.g. boat ramp surveys, because of OSH implications for research diving).
- Agree on in-season process for non-commercial allowances. Options:
  - i. Non-commercial allowances do not change in-season;
  - ii. Non-commercial allowances increase in same proportion as commercial ACE;
  - iii. Non-commercial allowances increase at level considered likely to reflect changes in recreational harvest levels (**preferred option**).

Two additional options are whether:

- iv. Changes in recreational bag limit are linked to change in non-commercial allowance; or
- v. Changes in recreational bag limit are not linked to change in non-commercial allowance.

This question will be addressed when further information is available on recreational harvests and the biomass of non-commercial beds (see actions above).

- Options for ensuring commercial fishers have timely access to available yield:
  - i. **Option 1:** Streamline in-season increase process. This would involve stakeholders agreeing on the % of the CAY estimate on which to base available ACE; agreeing on a timetable for consultation; agreeing on the information required for consultation i.e. a one pager with the fisheries plan available to provide further information if required.

**Option 1a:** ACE increase set at 100% of the CAY estimate; commercial fishers then decide how much of total ACE to harvest. This approach would provide maximum flexibility for commercial fishers. Nonetheless, research indicates it is desirable to fish more conservatively in low scallop abundance years. Commercial fishers would need to agree formally on what portion of the available ACE to fish, and to hold fishers to this agreement.

There are benefits of maintaining catches lower than the CAY estimate, because the fishery is more likely to be stable over time at lower harvest rates. For a shared fishery there are mutual benefits if all fishers (commercial and non-commercial) commit to a conservative approach. Leaving more scallops in the water provides a buffer against natural variability and any changes in environmental conditions.

**Option 1b:** In-season ACE increase set at a proportion less than 100% of the CAY estimate, to be agreed amongst stakeholders.

The recent commercial catch has been around 35-40% of the conservative CAY estimate. Fishing up to a smaller portion of the CAY estimate may provide less flexibility for commercial fishers. However, all stakeholders would need to agree to the decision rule to help streamline the process, and agreement may be easier to reach at a somewhat lower/more conservative level. As noted, there are advantages for all stakeholders in taking a conservative approach. Option 1b has a better fit with the objective to manage the fishery sustainably within a cautious approach.

Under this option, the plan could outline a proportion of the CAY estimate that commercial fishers could harvest up until with minimal debate (i.e. a stream-lined consultation process). If they wished to harvest above that level or up to the full CAY estimate, then further debate with the fisheries plan group would be required, and the process would take longer. The suggestion is that the commercial catch limit could be set at up to 50-60% of the CAY estimate as part of a streamlined process.

ii. **Option 2:** Review baseline TAC/C

Reviewing the baseline TAC/C could potentially provide for a higher baseline level, which would lessen the urgency of the in-season increase to available ACE. Scientific modelling information suggests the amount of catch that can be taken sustainably every year is close to zero, because of the population fluctuations of scallops. Therefore, an increased baseline TACC would mean greater potential risk but would lessen impact of any delays in in-season increase to catch limit. It is the Ministry's preferred option to ensure commercial fishers have timely access to available yield through streamlining of the annual increase process rather than through changes to the baseline TAC/C.

- Could do modelling to determine optimal harvest strategies to achieve objectives.

*Monitor –*

- Biomass of commercial beds (ongoing surveys)
- Biomass of non-commercial beds and recreational harvest
- Timeliness of in-season increase (measure: new ACE available before baseline ACE has all been fished)
- Satisfaction of recreational fishers with bag limit

***Strategy to enable customary use of scallops consistent with tikanga (customs) and kawa (protocols) (objective C1(iv))***

*Assessment –*

Factors important for utilisation for the customary sector include:

- Tikanga and kawa regulate harvest;
- Historical measures of catch effort are used to regulate harvest;
- Predictors such as seasonal cues are used;
- Customary purposes are met (tangi and hui; papakāinga use; tribal obligations – manaaki);
- Mahinga mātaītai (harvest sites) are identified

Traditionally, the customary right was for hui, tangi, papakāinga and marae needs, and obligations to provide food for others. For those who identify themselves as customary fishers, harvest can occur under amateur fishing regulations, to meet some immediate needs. However, because the quantity a person can take is limited to 20 scallops per day, further development is required to better meet customary needs. Collection of scallops for hui/tangi (more than the amateur daily bag limit of 20 scallops) is permitted using a permit under Regulation 27A of the amateur fishing regulations, or regulation 11 of the Kaimoana Regulations.

Putting the Kaimoana Customary Fishing regulations in place will enable tangata whenua to take more than the amateur daily bag limit for a broader range of uses, other than just for a hui or tangi. Setting up the Kaimoana Regulations involves gazetting an iwi or hapu's rohe moana (traditional fishing grounds) and tangata kaitiaki (environmental stewards or guardians). Kaitiaki can issue permits to meet customary purposes. Seven applications have been notified within the Coromandel scallop fishery area as of the end of 2006.

Further information is also needed to determine whether the existing customary allowance reflects customary needs and purposes. Preliminary discussions about customary harvest have occurred with the fisheries plan group. There is probably little understanding within the general public about Maori customary fishing practices (e.g. use of specific seasonal indicators; use of rāhui (closures) when catch effort declines; closure of nursery areas; and division of food beds into: beds of significance; general use areas; and special reserves – easy access for tangi and hui held at the marae).

Some areas have particular significance for customary fishing, based on the special associations with that area. For example, kaimoana (seafood) from a specific place may be used to mark rites of passage, such as death, birth, naming ceremonies, and training. Discussions have started with

iwi/hapu to identify these areas. More discussion needs to occur about what forms of management would be appropriate for these areas.

There are some concerns about the method of dredging in nearshore areas, where diving could be used as an alternative method. For example, there are concerns about recreational dredging in Tauranga Harbour causing damage to horse mussel beds. Tauranga Harbour is outside of the Coromandel scallop quota management area, but this example indicates the need to consider impacts of non-commercial dredging in some areas.

There is also some concern about wastage of food, such as beach-cast scallops. Based on local knowledge, tangata whenua would gather beach-cast scallops from beaches following storms. Kai would be gathered and distributed to other areas, or kin from other areas would gather their own beach-cast scallops (after checking with locals).

#### *Actions –*

- Continue implementation of Kaimoana Regulations
- Share customary perspective on what's important for harvest of scallops (during fisheries plan meetings)
- Inform other stakeholders about sites of particular significance to customary fishing as appropriate.
- Appropriately manage sites of particular significance to customary fishing, using existing customary tools: section 186A temporary closures; mātaitai reserves (once Kaimoana regulations are in place).
- Explore other ways of obtaining information on or assessing customary catch – e.g. through iwi forums, Pou Hononga.

### ***Strategy to ensure efficiency of scallop harvest (objectives C2, C3)***

#### *Assessment –*

A 2002 Fisheries Assessment Research Document has assessed the commercial dredges used in this fishery against other types of dredges. That report concluded the dredges used in this fishery were the most efficient of the options available.

Commercial fishers note there are economic incentives for them to operate their dredges to maximise catch rates, for example by minimising the number of broken scallops. Most fishers continually update their dredge configuration to increase its efficiency. In addition, when full, box dredges lift from the seabed, rather than continuing to drag along it. Scallop processors monitor scallop recovery rates (i.e. the amount of scallop flesh per shell).

The 6-7 commercial vessels generally fish in one of the main scallop beds at the same time (partly because of biotoxin certification requirements). Conservative fishing below the CAY avoids the negative uneconomic “race for fish” that can occur at higher catch levels. Some risk might arise if new fishers enter the fishery and do not follow these patterns of fishing.

Non-commercial dredges are not standardised. Research in 1997 indicated they are inefficient, but cause low scallop mortality per pass. Research has not considered the effects of non-commercial dredging on seabed habitats.

Fisheries regulations allow fishers to take scallop wash-ups during the closed season, subject to the normal bag and size limits. Some customary and recreational fishers consider these regulations may be too restrictive and contribute to wastage. Fishery Officers consider that a relaxation of the regulations could create compliance difficulties with the regulations for normal on-the-water scallop fishing.

#### *Actions –*

- Experienced commercial fishers to share knowledge with any new fishers on ways of minimising incidental scallop mortality. Options:

- i. Formal code of practice
- ii. Informal approach

An informal approach may give fishers more flexibility and greater ability to respond to any changes. Conversely, it would be easier to direct new fishers to a developed code of practice. The Ministry could assist in production of a code of practice.

- Processors continue to monitor informally recovery rate and report information to fishers. When average recovery rate falls below a certain level (e.g. 12.5%), may need to change fishing patterns e.g. change location of fishing.
- Commercial fishers continue fishing in generally cooperative manner by adopting cautious harvest strategy and fishing together in the same areas.
- Options for addressing usage of washed up scallops:
  - i. Continue implementation of Kaimoana Regulations, and use permitting system available under the regulations to enable use of washed up scallops (permits could be written to enable harvest of greater numbers of scallops, including those below mean high water mark). **Preferred option.**
  - ii. Review regulation that governs harvest of scallop wash-ups. This is a national regulation, so would need to consider implications for scallop fisheries in other areas also.

#### *Monitor –*

- Average recovery rate (scallop processors to continue informal monitoring)
- Methods used in the non-commercial fishery (informal)

### ***Strategy to enhance the scallop fishery (objective C4)***

#### *Assessment –*

Recent legislative changes now require people to establish an Aquaculture Management Area before applying for registration as a fish farmer, even to conduct small scale trial programmes. The process for establishing an AMA will be costly, complex, and lengthy, with no certainty of outcome.

Previous scallop enhancement trials in the Coromandel and Hauraki Gulf area have had varying success. Finance would be required to implement a large scale enhancement programme.

#### *Actions –*

- No Ministry-led actions at present. However, if stakeholders indicate interest in pursuing aquaculture, the Ministry will attempt to facilitate this where possible.

### ***Strategy to encourage compliance with fisheries regulations (objective C1(viii))***

#### *Assessment –*

Limited information is available about the level of compliance.

The Ministry considers there is currently a reasonably high level of compliance amongst most commercial fishers with closed areas, the size limit, and not overfishing ACE levels. There is some compliance risk from a small proportion of recreational fishers who significantly breach the bag and size limits. In general, the Ministry considers there is currently a reasonable level of compliance amongst most recreational fishers in the Coromandel scallop fishery with the bag and size limit.

However, compliance staff presence has in the past been limited to one HFO on the Coromandel peninsula. There are high numbers of non-commercial fishers at peak periods. Anecdotally, there are higher levels of non-compliance amongst visitors to region.



### *Actions –*

- Continue existing compliance activities
- Provide feedback to compliance team in relation to stakeholder concerns with compliance staffing levels (especially HFO numbers) (note that as of December 2006, new HFOs have been appointed to Coromandel area).
- Ministry to ensure GPS coordinates of areas closed to commercial fishing are widely available

### *Monitor –*

- Stakeholder perceptions of compliance rates
- Detected levels of non-compliance

## ***Strategy to ensure management credibility (objectives D1-3)***

### *Assessment –*

Stakeholders have some concerns that current management does not provide for flexible decision-making. There are two key areas where stakeholders are seeking improvement: first, streamlining the in-season TAC increase process; and second, providing for the possibility of adjusting the amateur daily bag limit between years. Some recreational fishers also want a more flexible approach for area closures to avoid local depletion.

Commercial stakeholders also have an interest in minimising the costs of management and research. Industry would like to look into direct purchase of the pre-season survey and stock assessment from NIWA. Environmental stakeholders did not consider directly purchased research would have the same credibility as independent research.

Communication with the public is currently ad hoc. Stakeholders identified the need for further engagement with the public to educate them about the cautious management approach, highlight any changes to the amateur scallop regulations, inform them about the overall state of the fishery and any potentially locally depleted areas.

### *Actions –*

- Multi-stakeholder group meets annually to review/monitor fisheries plan
- Ministry to publicise fisheries plan and its contents
- Ministry to make key documents available on its website ([www.fish.govt.nz](http://www.fish.govt.nz))
- Workshop to debate direct purchase of research (within scope of current Ministry policy)
- Ministry to report back on monitoring/review of fisheries plan performance
- Facilitate stakeholder participation in research surveys where possible (e.g. by enabling stakeholders to be present during research dredging).

### *Monitor -*

- Progress against fisheries plan objectives

## ***Stage 5: Monitoring and review of the plan***

A 2 year operational plan is included with this draft fisheries plan (below). Formal consultation will occur in the latter half of 2007 on objectives for this fishery, and the associated management strategies to achieve those objectives.

The Ministry of Fisheries proposes that the group involved in development of this fisheries plan should meet annually to review the plan and monitor progress towards achieving objectives. Specific items for monitoring have been listed alongside each of the management strategies in the previous section.

Operational plan 2007 – 2008

2006		2007		2008	
Oct - Dec 2006		Jan - Jun 07	Jun - Dec 07	Jan - Jun 08	Jul - Dec 08
Sustainability	Ongoing: monitor stock biomass and CAY estimates in relation to baseline TAC. Record and assess any concerns raised about local depletion.				
Aquatic environment			Assess fishery against benthic impact standard when available.	Workshop on additional measures to meet group's environmental objectives	
	Ongoing: monitor methods used by non-commercial fishers.				
Biosecurity			Present plan to Biosecurity NZ	Monitor bycatch during biomass survey (May 2008)	
	Ongoing: hold urgent meeting to develop responses, if required, if stakeholders raise biosecurity concerns with the Ministry.				
Environmental context			Present plan to Hauraki Gulf Forum		
			Present plan to universities and research institutes		
Ongoing: stakeholders use fisheries plan meetings to discuss/record any relevant development or land use practices likely to affect scallop populations.					
Utilisation	Commercial fishers do pre-survey assessment to fine-tune biomass survey (optional).	Results available for first survey of non-commercial scallop beds: early 2007	Second biomass survey of main non-commercial beds - October 2007.	Biomass survey of main commercial beds May 2008	Third biomass survey of main non-commercial beds.
		Biomass survey of main commercial beds May 2007.	Research recreational harvests - Sept 2007.	In-season increase to ACE and allowances if required (June 2007)	
		In-season increase to ACE and allowances if required (June 2007)	Assess information available to review bag limit; review if sufficient info available	Results available for first survey of non-commercial harvest: mid 2008; and for biomass survey of non-commercial beds: end 2008	
				Assess information available to review bag limit; review if sufficient info available	

Customary harvest	Ongoing: continue implementation of the Kaimoana regulations; share customary perspective on what's important for harvest of scallops during fisheries plan meetings; inform other stakeholders about sites of particular significance to customary fishing, as appropriate.				
Efficient use	Ongoing: Scallop processors continue to monitor scallop recovery rate informally and report to fishers. When average recovery rate falls below 12.5%, change fishing patterns to address. Commercial fishers continue fishing in generally cooperative manner.				
Compliance	Ongoing: continue existing compliance activities. Monitor stakeholder perceptions of compliance levels and liaise with compliance team. Make information on closed areas available to the public.				
Management		Annual meeting to review/monitor fisheries plan (June 2007)	<i>Formal consultation on fisheries plan (after standards are available). (Depends on timeline for standard development)</i>	Facilitate stakeholder participation in research surveys where possible (May 2008)	Annual meeting to review/monitor fisheries plan (June 2008)
		Facilitate stakeholder participation in research surveys where possible (May 2007)			
	Ongoing: inform public about the scallop fisheries plan; make key documents available on <a href="http://www.fish.govt.nz">www.fish.govt.nz</a> ; report back on monitoring/review of plan performance.				