

**Management Of Highly Migratory Fish Species:
Stakeholder Consultation Paper**

December 2002

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Summary

- 1 International arrangements for management of highly migratory species (HMS) are beginning to take shape. New Zealand has a national allocation of catch for southern bluefin tuna and allocations for other tuna species are likely to follow over the next five years or so. For these other species, New Zealand has an interest in expanding catch in order to establish its share of stock catch limits set by regional fisheries organisations, but a corresponding obligation to act responsibly and exercise reasonable restraint.
- 2 Meanwhile, tensions are emerging in the domestic tuna industry, especially in the longlining sector. There appears to be excessive competition for southern bluefin in particular, with consequent efficiency losses to the fishing industry and to New Zealand as a whole. There is some apparent commercial targeting of swordfish in contravention of commercial fishing regulations and to the concern of recreational fishers. Tuna fishers also catch large numbers of other fish species, especially sharks, the management of which needs to be considered. And the Government has a commitment to meet its obligations to Maori by introducing species into the Quota Management System (QMS) as expediently as possible.
- 3 In order to improve management, several tuna species, swordfish, various shark species and other fish bycatch species have been proposed for introduction into the QMS on 1 October 2004. However, management of HMS in the QMS raises a number of difficult issues, including the likely need to amend the Fisheries Act 1996 (FA96). Furthermore, there is some question whether the QMS is the most appropriate management framework for all highly migratory species, at least in the short to medium term.
- 4 The proposed overarching objective for HMS policy is as follows:

Maximise the value that New Zealanders obtain through the sustainable utilisation of highly migratory species, subject to –

- ✍ participating in the establishment of, and complying with, regional measures to ensure the sustainability of HMS stocks,*
- ✍ ensuring the viability of associated and dependent species; avoiding, remedying or mitigating adverse effects of fishing on the wider aquatic environment; and complying with international obligations arising from agreements on biodiversity, fisheries management and related issues,*
- ✍ providing for foreign licensed access as appropriate, and*
- ✍ meeting the Government's obligations to Maori under the Deed of Settlement.*

- 5 This paper presents and discusses several options for the future management of highly migratory species. These options are

(i) status quo (non-QMS with commercial catch limits where necessary);

- (ii) status quo then QMS when catch limits are necessary;
- (iii) a permit moratorium combined with option (i) or (ii);
- (iv) the QMS as it currently exists;
- (v) a modified version of the QMS;
- (vi) transferable effort entitlements; and
- (vii) co-operative ownership of quota shares.

- 6 Different approaches may be needed for different species, particularly during a transition period. However, under the FA96 as it exists, not all of the above options could be implemented to best effect without legislative amendment. This paper therefore seeks to identify the set of management tools that are needed and how they might work, so that the desired tools can be provided for in legislation.
- 7 At a later date, decisions will be taken about which approach will apply to each species to meet the purpose and principles of the Fisheries Act 1996 including, for instance, ensuring that fish and non-fish bycatch species are adequately protected. For any species proposed for introduction into the QMS, the Ministry of Fisheries would undertake consultation on the arrangements that would apply to that stock.
- 8 This paper seeks stakeholder feedback on the proposed HMS management objectives and on the various options presented. A set of questions is included at the end of the paper. **Comments are due by Friday 28 February, and should be sent to one of the following addresses:**

Email	hms@fish.govt.nz
Fax	04-470-2586
Post	HMS Project c/o Policy and Treaty Strategy Ministry of Fisheries PO Box 1020 Wellington

1 BACKGROUND AND SCOPE

1.1 The international context

- 9 Amongst the highly migratory species that occur in New Zealand waters, fishers target primarily tuna species, fishing for them on the high seas as well as in the waters of New Zealand and other countries. International management regimes for tuna species are gradually emerging. New Zealand catches only a small proportion of the annual take of most of these stocks.
- 10 Under article 64 of the 1982 UN Convention on the Law of the Sea (UNCLOS), New Zealand has an obligation to co-operate with other states through appropriate international organisations to ensure conservation of, and to promote optimum utilisation of, highly migratory species¹. This obligation is repeated and reinforced in article 8 of the UN Fish Stocks Agreement (UNFSA), which provides a framework for the establishment of regional fisheries management organisations (RFMOs) to manage these stocks.
- 11 New Zealand is an active participant in two such regional organisations. The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) was ratified in 1994. Including Taiwan, which is in the process of joining, its members accounted for approximately 92% of the harvest of southern bluefin tuna in 2000. The CCSBT and its members have established catch limits towards the goal of rebuilding the fishery by 2020.
- 12 A second agreement, the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC), was signed in September 2000 by New Zealand and several other nations. Although this convention has yet to come into force, signatory states are working to establish a commission to manage tuna and other HMS stocks in the region.² The Commission will have a number of functions, including setting conservation and management measures for HMS stocks, probably within the next five years or so for tuna species. The WCPFC sets out the factors to be considered by the Commission in developing allocation criteria. Based on experience in other tropical tuna management organisations, work on allocation of catch to member countries is likely to occur over several years.
- 13 Oceanic sharks also constitute a considerable portion of the catch taken in the tuna fisheries (see section 2 below). Blue sharks in particular are usually retained for their fins or meat. In 1999, the UN Food and Agriculture Organisation (FAO) adopted an International Shark Management and Conservation Plan of Action, which called upon governments to cooperate in managing sharks and “aim to keep total fishing mortality for each [shark] stock within sustainable levels by applying the precautionary approach.” The WCPFC might adopt conservation and

¹ Highly migratory species are defined in UNCLOS by reference to a list of species in Annex 1 of that Convention. The list includes several tuna species, frigate mackerel, pomfrets, marlins, sailfishes, sauries, dolphin, oceanic sharks, and cetaceans. The Western and Central Pacific Fisheries Convention defines highly migratory fish stocks by reference to the UNCLOS Annex, but adds “and such other species of fish as the Commission may determine”.

² A Preparatory Conference is already functioning. For more information, see Appendix 1 or www.ocean-affairs.com.

management measures for sharks, swordfish and other HMS in addition to tuna, although such measures may take several years to emerge.

- 14 New Zealand is a party to several other international agreements that have a bearing on HMS management, including some related to seabird conservation. Appendix 1 provides more information on some of the more notable agreements, including those mentioned above. While some of these agreements are general in nature, they highlight the need for fisheries management that conserves associated and dependent species and the wider aquatic environment.

1.2 The New Zealand context

- 15 Tunas are the only species that are exempt from the moratorium on new fishing permits that has been in place since 1992. They are harvested by several fishing methods, some of which capture a diverse range of bycatch species. Apart from some gear restrictions on longline vessels designed to reduce seabird bycatch and restrictions on fishing for certain billfish species (which apply only within New Zealand fisheries waters), the only significant management measure in place is a commercial catch limit for southern bluefin tuna.
- 16 New Zealand needs to establish management regimes to implement conservation and management measures, including catch limits, adopted by regional organisations such as the CCSBT and future measures of the WCPFC. In addition, there are various domestic management issues in these fisheries that need to be addressed, including high concentrations of activity on some of the fishing grounds, fish and non-fish bycatch issues and Treaty of Waitangi obligations. The New Zealand Biodiversity Strategy provides further context to bycatch issues (see section 1.3 of this paper).
- 17 In New Zealand, the preferred approach for managing fisheries is the Quota Management System (QMS) provided for in the Fisheries Act 1996.³ Accordingly, the Ministry of Fisheries has included several HMS on its proposed schedule for introduction of new species into the QMS (Ministry of Fisheries, 2001). Five tuna species (southern bluefin tuna, Pacific bluefin tuna⁴, bigeye tuna, yellowfin tuna and albacore), along with swordfish, four shark species, and other highly migratory fish bycatch species, are on the schedule, with introduction proposed for 1 October 2004. The highly migratory and related species under consideration for QMS introduction are shown in Table 1. Skipjack tuna was not included on the Ministry's list of species proposed for introduction into the QMS, but future management of this species also needs to be considered, and hence it is included in Table 1.
- 18 There is some question about whether the QMS is the best management framework for all highly migratory species, at least in the short to medium term. This paper explores various options for managing HMS and seeks feedback from stakeholders on the way forward. The Ministry of Fisheries aims to have new management measures for HMS in place by 1 October 2004.

³ In 2001, a working party convened by the Ministry of Fisheries and involving other stakeholders agreed that stocks requiring management intervention and not already being managed in the QMS should be introduced expeditiously.

⁴ The species previously identified as northern bluefin tuna (NTU) in the western and central Pacific Ocean was in 1999 recognized as a separate species, Pacific bluefin tuna. Atlantic bluefin tuna occurs primarily in the Atlantic and Indian Oceans (Murray et al., 2001), p 14.

- 19 If management of HMS via the QMS or other options required legislation, that legislation would need to be enacted by Parliament at least one year prior to the new management regime taking effect. The Ministry of Fisheries aims to have legislation enacted by 1 October 2003 in order to enable implementation of the QMS or other management options for the fishing year beginning 1 October 2004.

Table 1. Highly migratory species under consideration for introduction into the Quota Management System.

Target species (code)	HMS? ^a	Comment
Southern Bluefin Tuna (STN ^b)	v	NZ EEZ catches are about 2.5% of total catch in the region. ^c
Bigeye Tuna (BIG)	v	NZ EEZ catches are about 0.4% of total catch in western and central Pacific. ^d
Yellowfin Tuna (YFN)	v	NZ EEZ catches are less than 0.1% of total catch in western and central Pacific. ^d
Albacore (ALB)	v	NZ EEZ catches are about 10% of total catch of south Pacific albacore in the western and central Pacific. ^d
Skipjack Tuna (SKJ) ^e	v	NZ EEZ catches are about 0.5% of total catch in western and central Pacific. ^d
Bycatch species (code)		
Pacific Bluefin Tuna (TOR)	v	Previously recorded as northern bluefin (NTU); see footnote 4 on page 5.
Swordfish (SWO)	v	Targeted by some recreational fishers; there is circumstantial evidence of some commercial targeting as well.
Ray' s Bream (RBM)	v	Appears on 7% of longlining returns. ^f
Moonfish (MOO)		“ 51% “
Blue shark (BWS)	v	“ 32% “
Mako shark (MAK)	v	“ 15% “
Porbeagle shark (POS)	v	“ 5% “
Seal shark (BSH)		“ 0.05% “
Spiny dogfish (SPD)		“ 0.04% “
Other sharks & dogfish (OSD)		“ 0.4% “

^a Highly Migratory Species as defined and listed in Annex 1 of UNCLOS.

^b The official Ministry of Fisheries code for southern bluefin is STN, though for the remainder of this paper the more common abbreviation SBT is used.

^c Based on estimated total catch of 15,600 tonnes (source: www.ccsbt.org).

^d Share of regional catch is based on data in Murray et al (2002) and Lawson (2002).

^e Skipjack tuna is not on the Ministry of Fisheries schedule of species proposed for introduction into the QMS, but future management of this species also needs to be considered.

^f Frequency of records on tuna longlining catch forms (TLCERs) from 1 January 1998 to 31 December 2001. Given the likelihood of some under-reporting (e.g. only the top five fish bycatch species are listed on each form), these figures should be seen as minimum estimates.

1.3 Ecosystem issues

- 20 In 1996, with the enactment of the FA96, the Ministry of Fisheries announced that it was moving towards an ecosystem approach to managing fisheries. This approach recognises that fisheries are a finite resource and are part of wider aquatic ecosystems. It also recognises the need for both fisheries and the wider ecosystem to be managed together in ways that ensure their survival (Ministry of Fisheries, 1996).
- 21 The Ministry of Fisheries is currently preparing an environmental management strategy that sets out the Ministry's approach to environmental issues: addressing impacts on associated and dependent species, protecting significant habitats, and taking into account implications of fishing for the aquatic food web. Implementing this strategy would also contribute to the achievement of the objectives of the New Zealand Biodiversity Strategy.
- 22 Incidental seabird bycatch is being addressed in a national plan of action that will cover a range of fisheries. HMS fishers will be required to comply with any rules that emerge from that plan of action. This HMS paper takes into account the implications that management structures and profitability of fisheries have for incidental bycatch.
- 23 Non-target fish bycatch species will be managed using one or more of the approaches discussed in this paper. How any particular species will be managed, e.g. what output controls should apply and what additional input controls might be appropriate, will be decided later, taking ecosystem issues into account.
- 24 The Ministry of Fisheries is not aware of any significant adverse impacts on marine habitats from HMS fisheries. To the extent that there are habitat impacts from methods (e.g. trawling) occasionally used in these fisheries, they will be addressed in the context of the fisheries where these methods are more common.
- 25 Scientific understanding of the effects of tuna fishing on the food web is still in its infancy. The present focus is on research to improve understanding of marine systems. As better information becomes available, the Ministry will adjust its management regimes accordingly. In addition, the Ministry will encourage RFMOs to take ecosystem factors into account when establishing conservation and management measures for HMS. In the meantime, the Ministry of Fisheries is committed to improving the management of HMS fisheries to address existing management problems.
- 26 Legislation needs to provide management options that will accommodate an ecosystem approach to fisheries management. The ability to control catch of individual species is a key element of an ecosystem approach. The actual application of that approach will come when management decisions are made about particular fisheries and species, especially how and at what levels to set input and output controls.

1.4 Scope of this consultation paper

- 27 The Ministry of Fisheries is currently considering what statutory provisions are required for future management of HMS. This paper primarily addresses issues such as QMS introduction (including quota allocation) and management boundaries, other possible management regimes, catch limits and reporting, and foreign access.

Issues outside the scope of this paper

- 28 There are some existing management arrangements that are not discussed in this paper. While these matters could be reviewed in the future, they are outside the scope of this project:
- (i) If HMS are introduced into the QMS, allocation between commercial and non-commercial sectors will be done as currently provided for in the FA96;
 - (ii) Marlin will remain a non-commercial species in New Zealand, i.e. commercial fishers are not allowed to land it. Sailfish and spearfish will remain non-commercial species in the Auckland Fisheries Management Area.

2 DESCRIPTION OF HMS FISHERIES

2.1 A brief overview of tuna fishing in New Zealand⁵

- 29 The New Zealand tuna industry now lands tuna year round with peak summer activity by a large troll fleet (usually over 200 vessels) targeting albacore, a small purse seine fleet (nine vessels) targeting skipjack, and longliners (over 100 vessels) targeting southern bluefin tuna in winter and bigeye tuna throughout the year. The value of this industry exceeds \$45 million per year (export value) with potential to expand further (Murray et al., 2002).
- 30 New Zealand tuna fishing began in 1968 when the FV *Sea Bee* began landing large catches of albacore into North Island ports. This interest expanded following the successful purse seine surveys in 1974 and 1975 by the FV *Paramount* targeting skipjack. Interest in other tunas followed with commercial catches of southern bluefin tuna off the West Coast of the South Island in 1980 by handline. In more recent years (since 1991-92), tuna fishing has expanded into a year round fishery due in large part to the development of longline fisheries for southern bluefin and bigeye tunas. The expansion of domestic capacity occurred as foreign licensed interest in fishing within the exclusive economic zone (EEZ)⁶ declined during the 1980s and 1990s. The foreign fleets that dominated New Zealand tuna catches from the 1960s have not fished in the EEZ since 1994-95 with the exception of occasional purse seine sets by USA vessels.
- 31 Southern bluefin tuna have traditionally been caught by handline and trolling during winter months off the West Coast of the South Island from small vessels. Although these methods are still occasionally used, most southern bluefin are caught by medium to large (20m – 50m) longline vessels in the autumn-winter months. The southern bluefin fishery has been closing in early winter in the past few years as the catch limit has been reached, at which point longline vessels target other species. Albacore form the basis of a summer troll fishery in New Zealand, primarily off the west coasts of the North and South Islands. Albacore are also caught throughout the year by longline. Bigeye tuna are caught by longline around the northern half of the North Island throughout the year.
- 32 Skipjack are caught primarily by purse seine during the summer months, but also in small numbers by trolling. Yellowfin tuna, caught in small numbers in the troll and purse seine fisheries, are generally a bycatch of longline sets targeting bigeye in the summer. Although it is possible to target swordfish with longline gear, swordfish are reported as a bycatch of longline sets targeting bigeye and southern bluefin around both the North and South Islands. Figure 1 provides a general picture of the seasonality of the main tuna fisheries.

⁵ This section consists primarily of material from Murray et al (2001); see the Executive Summary and Introduction of that report. Vessel data has been updated with more recent information where available.

⁶ The Exclusive Economic Zone (EEZ) is the area beyond the territorial sea (i.e. the 12-mile limit) and within 200 nautical miles of the New Zealand coastline. Where this overlaps with the EEZ of another country, the area is partitioned between the two jurisdictions. In this paper, “New Zealand fisheries waters”, “within the EEZ” and “in-zone” are used inter-changeably and all include both the territorial sea and the EEZ. For the purposes of this paper, the distinction between the territorial sea and the EEZ is only significant in terms of foreign licensed access, which applies to the EEZ only. Thus, in section 5.6 of this paper only, “within the EEZ” excludes the territorial sea.

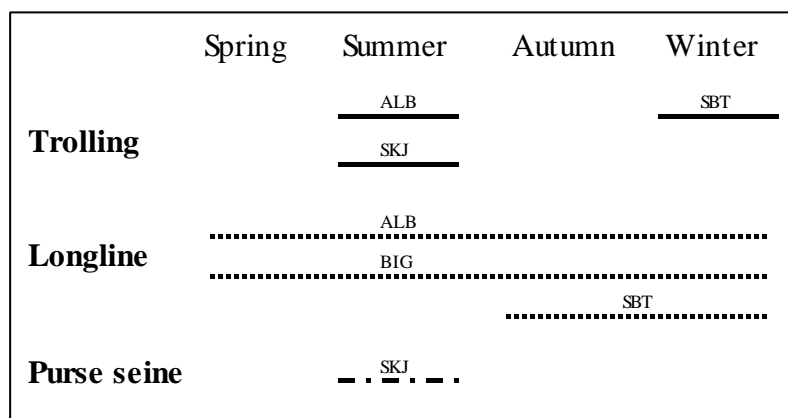


Figure 1. Seasonality of catch and species targeted in the main tuna fisheries in New Zealand (based on Murray et al., 2001).

- 33 Annual domestic tuna landings are now expected to be on the order of 3700-6500 tonnes for albacore, 100-400 tonnes for bigeye, 1000-7500 tonnes for skipjack, 420 tonnes (+/-) for southern bluefin, and 100-200 tonnes for yellowfin tuna. Domestic swordfish catch, regarded as an incidental longline catch, has increased from about 100 tonnes in the mid-1990s to about 1000 tonnes since 1999 and could increase further. Most increases in catch can be attributed to the trend in increasing longline fishing effort that began in 1991-92, although the composition of the catch has also changed with changes to the fleet and the gear used (Francis et al., 2000). See Appendix 2 for catch data for tuna since 1990.
- 34 In 1998-99 albacore and skipjack catches declined, probably due to low market demand. In both instances effort in 1998-99 was significantly lower than the previous year, despite albacore catch per unit effort (CPUE) in the troll fishery being high. There is no trend in skipjack CPUE.
- 35 Longline CPUE trends differ by species, from a slight declining trend since 1990-91 for albacore to no appreciable trend for bigeye tuna over the same period. Southern bluefin tuna CPUE increased during the first 2-3 years of domestic longlining but has been stable since 1992-93. See Figure 2.
- 36 Swordfish CPUE (bycatch rate regardless of target species) appeared to decline from 1991-92 (few sets) but showed a slight increasing trend since 1994-95. See Figure 2. Anecdotal evidence, e.g. the use of light sticks with bait and increasing CPUE since 1994-95, suggests that there may be some commercial targeting of swordfish. Swordfish catch data are presented with tuna data in Appendix 2.

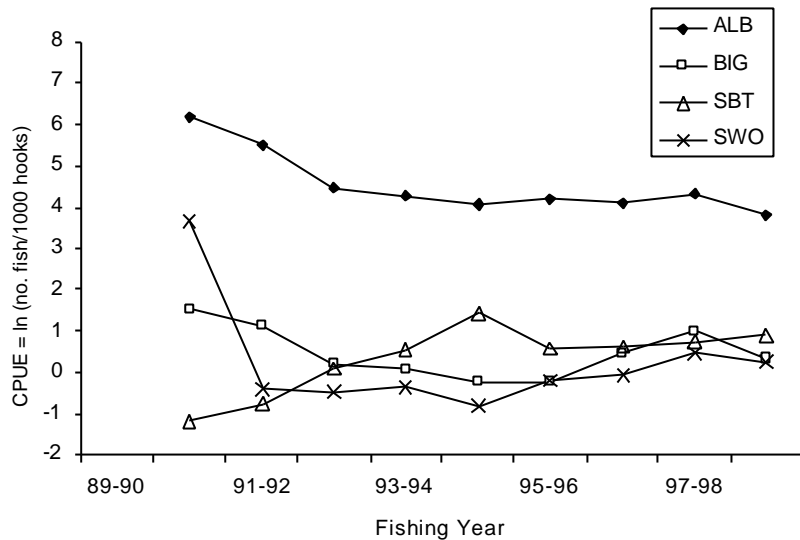


Figure 2. Longline CPUE (natural log of number caught per 1000 hooks) for domestic owned and operated vessels. Swordfish CPUE is for all sets regardless of target species. Source: Murray et al., 2001, Figure 6.

2.2 Fish bycatch in the tuna fisheries

- 37 Francis et al (2000) reported that between 1988–89 and 1997–98, more than 207,000 fish of 70 species were observed on tuna longlines although, not counting tuna, there were only 15 species with average observed catch greater than 100 fish per year. Albacore and blue shark dominated the catch, with estimated shares of 32% and 30% respectively. Southern bluefin tuna, Ray’s bream, porbeagle shark, and mako shark contributed 6–7% of the catch each. Lancetfish, oilfish, broadbill swordfish, moonfish, butterfly tuna, yellowfin tuna, and dealfish each made up 1.3–3.2% of the catch. Bigeye tuna, deepwater dogfish, school shark, and rudderfish made up less than 1% each. For the period 1994-1998, due to changes in the composition of the fishing fleet, the proportion of albacore in the longline catch increased to 44% and blue shark decreased to 22%.
- 38 These estimates were obtained by scaling up observer data to the entire fleet taking into account different bycatch rates in different locations and of different types of vessels. While observer coverage has been high (up to 100%) on the foreign and chartered fishing vessels, coverage on domestically owned and operated vessels has been low (average of 2% between 1996-97 and 1999-2000, and less than 1% in the last two of these years). This has prevented estimation of the entire fleet’s fish bycatch in 1998-99 and subsequent years.
- 39 Non-target and incidental species caught in the longline fishery also include gamefish such as marlin; a wide variety of seabirds; some fur seals; and, rarely, a larger marine mammal.

- 40 According to observer data, most blue, porbeagle, mako and school sharks, and moonfish and butterfly tuna caught in 1997-98 were processed. Most of the blue and porbeagle sharks were finned only, and the rest of the carcass was discarded, whereas mako and school shark were usually retained and processed for flesh. Domestic vessels discarded or lost a higher proportion of their blue and mako sharks than did foreign and charter vessels. Nearly all deepwater dogfish, Ray's bream, dealfish, oilfish, lancetfish, and rudderfish were discarded or lost (Francis et al., 2000).
- 41 A study using data from the North Atlantic and North Pacific suggests that pelagic longlines targeting swordfish tend to have much higher catch rates of certain vulnerable species (sea turtles and albatross especially) than do longlines targeting tuna (Crowder and Myers, 2001), and cites various fishing practices, including night setting and the use of lightsticks, that may explain the higher rate of bycatch. Similar analysis has not been done in New Zealand.
- 42 Reports in the early 1980s indicated that the purse seine fishery also catches a wide range of bycatch species, while relatively little bycatch was observed in the troll fishery. Neither fishery has had any significant observer coverage since that time.

2.3 Recreational fishing for HMS

- 43 The recreational fishery for billfish pre-dates the development of a commercial fishery for large pelagic species by many years. The recreational fishery is dominated by striped marlin, with blue and black marlins occasionally taken. In the early years of the fishery, striped marlin was fished from a variety of ports along the north east coast of New Zealand. In more recent years the fishery has extended to include the west coast of the North Island where many fishers operate out of smaller trailer borne vessels. This is associated with an increase in the number of private as opposed to charter vessels used for game fishing over recent years.
- 44 Declining catches of striped marlin in the early to mid 1980s led to the implementation of the 'Billfish Moratorium in Northern Waters' in 1987. These regulations prohibited domestic fishers from taking all billfish. In addition, fishing by foreign licensed tuna longline vessels was prohibited in the waters of the Auckland Fisheries Management Area (FMAs 1 and 9), and fishing by foreign charter vessels was restricted to winter months. As part of the regulatory provisions, billfish taken as bycatch by commercial fishers could be tagged on release. At that time recreational fishers also commenced in earnest a tag and release programme for striped marlin.
- 45 The terms of the moratorium on billfish for domestic commercial fishers were varied in 1993. The prohibition on taking swordfish in the Auckland Fisheries Management Area was removed and the prohibition on taking marlin species was extended to include all NZ fisheries waters. This arrangement prevails today. Also in 1993, domestic commercial fishers agreed to avoid fishing certain areas to reduce conflict over recreational access to swordfish. However, the domestic commercial fleet has grown much larger and no longer observes this area agreement.

- 46 Tagging results are an indicator of the size of the recreational catch. Further club records have been used for a number of years to determine catch and catch per unit of effort in the recreational charter fleet. For example, it was reported that 1303 fish were caught and tagged in 1996-97, which was 68% of the total (1916) catch of striped marlin (Hartill and Davies, 1999).
- 47 The recreational catch of swordfish is small by comparison. Swordfish are caught primarily at night and further from the coast than is routinely fished by recreational charter vessels. Annual catches were low until more recently when, associated in part with the development of new fishing techniques and the expansion in range of charter vessels, the interest in and catch of swordfish has grown considerably.
- 48 The fishery for pelagic game sharks is more widely distributed around both the North and South Island. The main species taken are mako and blue sharks. Sharks are commonly caught and released by recreational anglers and are often tagged on release.
- 49 There are recreational troll target fisheries for albacore and skipjack tuna. These are seasonal with main catches in summer and autumn on the east and the northwest coasts of the North Island. In 1996, a total recreational catch of 260-263 tonnes of albacore was estimated with the majority being taken in FMAs 1, 2 and 9. Recreational fishers have also tagged and released a large number of albacore in FMAs 1 and 2 as part of a coordinated programme (Annala et al., 2002).
- 50 Yellowfin tuna are a highly prized recreational species taken by troll and line fishing primarily in the Bay of Plenty and along the north east coast. There are no recorded estimates of recreational catch of yellowfin tuna, but catches are likely to fluctuate with the annual availability of yellowfin in NZ waters.
- 51 There is no known recreational fishery for bigeye tuna or southern bluefin tuna.

2.4 Status of HMS fish stocks⁷

- 52 The tunas, swordfish and other highly migratory species that are caught in New Zealand's EEZ are part of broadly distributed stocks that are subject to fishing by many fleets and gear types at different stages of their lives.
- 53 Southern bluefin tuna comprise a single stock occurring primarily between 30°S - 50°S in the South Atlantic, Indian and southwest Pacific Oceans. The stock is subject to catch limits via the CCSBT. Scientists assessing the stock agree that it has been overexploited, that the continued low abundance of the SBT parental biomass is cause for serious concern, and that recent increases in fishing mortality for juvenile fish will lead to lower recruitment from these cohorts to the parental biomass. The World Conservation Union listed southern bluefin as critically endangered in 1996.
- 54 Pacific bluefin tuna are part of a single stock distributed primarily in the northern Pacific Ocean, with most caught off Japan and California, though occurrences as

⁷ Except as otherwise noted, information in this section is taken from Murray et al. (2001).

far south as New Zealand and Chile have been reported. Stock status of Pacific bluefin tuna is unknown.

- 55 Bigeye tuna are considered to form a single stock in the Pacific Ocean from about 45°N - 45°S. Catches are primarily by longline, though concerns have been raised about the large catch of juvenile bigeye tuna by purse seine vessels using fish aggregation devices (FADs). Large numbers of juveniles are being caught in the central Pacific purse seine fisheries, and longline CPUE is declining. Fish caught in the New Zealand EEZ (primarily by longline) account for much less than 1% of the annual catch of bigeye. Concern over stock status has arisen because the species is relatively slow growing, longline CPUE appears to have been declining and juveniles may be subject to moderate to high exploitation rates. According to the scientific group advising the WCPFC Preparatory Conference, the bigeye stock is likely to be nearing full exploitation. Any increase in juvenile fishing mortality is likely to move the stock to an overfished state (WCPFC PrepCon, 2002).
- 56 Albacore form a single stock in the South Pacific, found between 5°S and 50°S from the Australian coast east to South America. Analysis of CPUE and preliminary modeling suggests a declining biomass from the mid-1970s to early 1990s that is postulated to be recruitment/climate driven. Nominal CPUE data from the New Zealand EEZ show no clear trend for the troll fishery but a marked decline in longline CPUE from 1990-91. Modeling indicates that South Pacific albacore appear to be only lightly exploited and that current catches are sustainable (WCPFC PrepCon, 2002). Albacore also occur in the North Pacific, but form a separate biological stock.
- 57 Skipjack tuna are a widely distributed (50°N - 40°S), fast growing species comprising a single Pacific stock. There appears to be no clear trend in standardised or nominal CPUE for several important skipjack fisheries in the western Pacific Ocean, or for the purse seine fishery in the New Zealand EEZ. Skipjack CPUE and size data together with tag analyses from the early 1990s suggest that current fishing is sustainable. Modeling indicates that adult biomass is greater than that which would produce MSY (WCPFC PrepCon, 2002).
- 58 Yellowfin tuna that occur in the New Zealand EEZ are part of a central and western Pacific Ocean stock that is separate from the yellowfin tuna stock in the eastern Pacific Ocean. Analyses of CPUE and preliminary length-based modeling show no evidence of current fishing levels having an impact on the stock and therefore fishing is regarded as sustainable. However, as with bigeye tuna, yellowfin is likely to be nearing full exploitation and any increase in fishing mortality, particularly on juveniles, is likely to move the stock to an overfished state (WCPFC PrepCon, 2002).
- 59 Swordfish stock structure is uncertain but has generally been considered to comprise a single Pacific Ocean stock. There have been several studies of swordfish genetics, some of which have suggested local stocks in the North Pacific, South Pacific and Indian Oceans (e.g. Ward et al., 2001; Sosa-Nishizaki and Shimizu, 1991). There is on-going research and debate on this point, but stocks might be sufficiently segregated to be relevant for fisheries management even while genetic exchange is maintained via migration.

- 60 Increasing catches of swordfish in New Zealand and Australia, some concerns about the potential for local depletion, and the scarcity of information on which to base a stock assessment, all contribute to concern over swordfish in the western South Pacific. A recent review stated, “there is no clear evidence of swordfish stocks or their fisheries collapsing from over-fishing” and noted “the apparent resilience of swordfish stocks to intensive harvesting”⁸. On the other hand, an international fisheries database cites the resilience of swordfish as “low”⁹. Stock status of swordfish remains uncertain.
- 61 Status of tuna and swordfish stocks is summarized in Table 2.

Table 2. Stock status of tuna species and swordfish

Stock	Status	Comment
Southern Bluefin	Severely depleted	NZ fishers subject to commercial catch limit.
Pacific Bluefin	Unknown	Only recognised as separate species from Atlantic bluefin in 1999.
Bigeye	Concern about juvenile mortality; Nearing full exploitation	Within the region, use of fish aggregation devices is leading to large number of juveniles being taken; longline CPUE is declining.
Yellowfin	Nearing full exploitation	Current catches considered sustainable.
Albacore (so. Pacific)	Sustainable	Lightly exploited.
Skipjack	Sustainable	Current catches considered sustainable.
Swordfish	Uncertain	Some concerns about potential for local depletion.

Sources: Murray et al (2001); WCPFC PrepCon (2002).

- 62 Regarding status of shark stocks, Crowder and Myers (2001), who examined longline logbook data in the Northwest Atlantic, found that, if CPUE is taken to be proportional to abundance, almost all sharks caught by pelagic longline in that area appeared to be declining rapidly. Their models indicated that CPUE for blue sharks declined by approximately 65% during the last 14 years. Crowder and Myers also reported that the status of porbeagle sharks in the North Atlantic is much worse than previously thought. Their comparison of the intrinsic rate of increase of sharks vs bony fish indicated that sharks are generally much more vulnerable to overfishing than bony fish.
- 63 Francis et al (2000) reported on fish bycatch in the New Zealand longline fishery. They concluded that, considering the dramatic decline in fishing effort around New Zealand, the low New Zealand shark catches compared with those elsewhere in the Pacific Ocean, and the stock and productivity characteristics of the species, it is unlikely that New Zealand’s tuna longline fishery is seriously affecting the stocks of blue, porbeagle, and mako sharks. However, an adequate stock assessment is probably not feasible using currently available data. Catches of oceanic sharks throughout the Pacific are poorly known, so accurate monitoring of

⁸ P Ward and S Elscot, 2000, *Broadbill swordfish, status of world fisheries*, Bureau of Rural Sciences, Canberra, Australia, quoted in Murray et al., 2001.

⁹ <http://www.fishbase.org/Summary/SpeciesSummary.cfm?genusname=Xiphias&species>.

levels of fishing mortality throughout the stock ranges would be an important first step towards ensuring sustainability of their populations.

2.5 Fisheries management issues

- 64 This section presents the major issues for HMS management. The ability of the different management options to resolve these issues in a satisfactory manner will have a significant bearing on the preferred approach to future management of HMS.

International obligations

- 65 New Zealand has an interest in establishing catch history for tuna species that will, but do not yet, have national allocations under regional fisheries arrangements. Allocations are likely to be set for albacore, bigeye, yellowfin and skipjack tuna under the Western and Central Pacific Fisheries Convention (WCPFC) within five to ten years.
- 66 In the meantime, a resolution from the Multilateral High-Level Conference for the WCPFC (in 1999, at its 4th session) urged all states to “exercise reasonable restraint in respect of any regional expansion of fishing effort and capacity and to apply the precautionary approach forthwith”, pending entry into force of the Convention and the establishment of binding conservation mechanisms. At the Third Preparatory Conference for the WCPFC in Manila, in November 2002, parties noted that capacity had continued to expand since 1999, noted recent scientific reports on stock status, and called again for countries to exercise reasonable restraint.
- 67 If New Zealand does not have capacity to harvest all of the allowable catch for a stock in its EEZ, then under article 62 of UNCLOS, New Zealand has an obligation to provide other states access to the surplus of the allowable catch. New Zealand also has obligations under the US-Pacific States Tuna Treaty to provide certain US-flagged purse seine vessels access to the New Zealand EEZ to fish for skipjack tuna. Foreign access is discussed further in section 5.6 of this paper.
- 68 As noted in section 1.1, there are also international obligations relating to sharks and seabirds. As information on these species improves and regional management measures emerge, New Zealand will need to implement those measures. In the meantime New Zealand needs to ensure that its fishers do not threaten the viability of sharks, seabirds or other fish or non-fish bycatch species.
- 69 Any future management regime would therefore need to enable New Zealand to do the following:
- (i) Exercise “reasonable restraint” for target and fish bycatch species (where New Zealand determines that a fishery requires restraint to be applied) pending the adoption of regional conservation and management measures;

(ii) Implement conservation and management measures, e.g. TACs or other measures, in a way that meets New Zealand's international obligation to cooperate with other states in the conservation and management of HMS;

(iii) Provide for foreign licensed access to the extent required under international obligations.

Domestic management issues in tuna fisheries

70 Of species managed outside the QMS, only tuna species are exempt from the 1992 permit moratorium. And of the tuna species, only southern bluefin has a catch limit, which is based on New Zealand's national allocation of 420 tonnes per year under the CCSBT. Costs are recovered for Ministry of Fisheries and Department of Conservation research, compliance or other services (such as observer coverage), with levy share based on catch in recent years. To date, observer coverage has been concentrated on the larger charter vessels, as most tuna vessels operating from New Zealand are small and do not easily accommodate fisheries observers. Video cameras and other options are being considered to improve independent observation.

71 Entry to these fisheries is comparatively unconstrained. Any new entrant can obtain a fishing permit for tuna, and so it may serve as an informal "training ground" for those interested in getting involved in fishing. In addition, because catch history years for tuna species are not specified in the FA96, fishers may have believed that by entering these fisheries in recent years, they could gain quota if and when tuna species were introduced into the QMS.

72 There are anecdotal reports of problems in the surface longline fishery, e.g. crowding of vessels and excessive competition for the fish available in the New Zealand EEZ. These problems are most evident in the southern bluefin fishery, where they appear to be driven by the commercial catch limit (CCL). The catch limit has been reached, and the fishery has been closed, progressively earlier in the past few years, creating pressure to fish early in the season. This competitive pressure can lead to several vessels trying to target the same area and, with longline vessels deploying tens of kilometres of line, some vessels can be effectively prevented from fishing in a preferred location by other vessels already there.

73 The pressure to catch fish early in the season also means that boats able to fish further from shore and in bad weather, which are generally larger vessels, have an advantage over smaller vessels. Neither the overcrowding nor the apparent disadvantage of smaller vessels would be a serious issue if fishing could be spread throughout the season, but with a competitive CCL fishers face a significant risk that the fishery will be closed early and that they will be shut out.

74 This 'race to catch' fish before the season closes can, at least in some years, result in fish being taken before they are in optimal condition. Anecdotal evidence suggests that fish taken early, when their condition is likely to be poor, might have only one-fourth the market value of fish taken later (e.g. \$25/kg in May vs. \$100/kg in August). With a competitive CCL, however, fishers cannot afford to wait until August because the fishery will probably be closed by then. Although

this situation may not prevail in all parts of the New Zealand zone or in all years, New Zealand might be getting substantially less than maximum value from its allocation of 420 tonnes of southern bluefin.

- 75 Overcrowding also reportedly occurs when longline vessels are targeting bigeye tuna during other times of the year. Even though there is no commercial catch limit, effort has been spatially concentrated. Whether this is due to fish aggregation behaviour or the desire of fishers to fish in certain locations for other reasons (e.g. proximity to port) is not clear.
- 76 The increasing numbers of longline vessels, shown in Figure 3, suggests that these problems are getting more serious over time and that access to the fishery may need to be controlled. On the other hand, the relatively open tuna fishery provides an avenue for entry to fishing, which can otherwise be a costly business to enter.
- 77 Note that although the troll fishery involves more vessels than the longline fishery, there is no comparable race for catch in the troll fishery apparently because the troll fishery primarily targets albacore, which are abundant and have no catch limit in New Zealand. Overcrowding has occurred in the past but is not a significant feature of the fishery now as the fishery has spread geographically in recent years. In addition, numbers of troll vessels decreased by over 60% during the mid-1990s and are still well below the peak of 490 vessels in 1993/94. (See Figure 3.) In the past, when large US super seiners fished freely in the EEZ, domestic purse seine fishers complained of crowding on the east coast of the North Island.

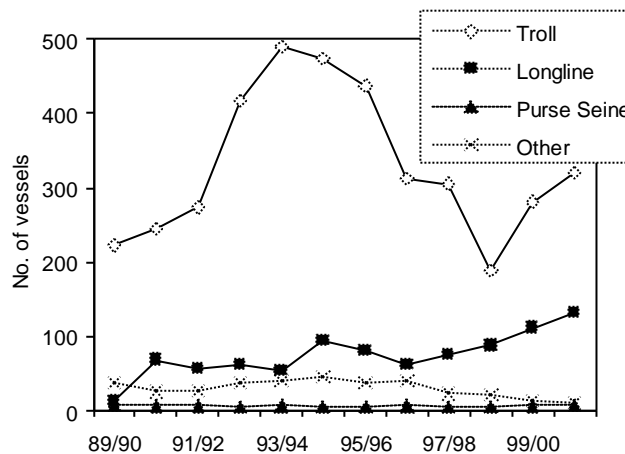


Figure 3. Numbers of vessels targeting tuna species by gear type and fishing year.

Problems after annual closure of SBT fishery

- 78 When the CCL for SBT is reached and the fishery is closed, further take of southern bluefin, including as bycatch in other fisheries, is prohibited. The

survival rate of fish returned to the sea is low, and it could become necessary to estimate this mortality and adjust the catch limit accordingly.

- 79 Furthermore, anyone taking such a species is committing a regulatory offence unless they can meet the defence in s.241 of the FA96. When the SBT fishery is closed, therefore, this could effectively result in fishers having to avoid areas in which SBT bycatch is reasonably likely, or be subject to fines up to \$100,000 under Regulation 9 of the Fisheries (Southern Bluefin Tuna Quota) Regulations 2000. The implications of s.241 apply to any non-QMS species subject to a regulatory catch limit once that limit has been reached and the authority to take or possess the species has been withdrawn.
- 80 For species in the QMS, instead of a strict regulatory catch limit, all catch must be landed and balanced against annual catch entitlement (ACE). The balancing regime provides incentives for fishers to ensure they have sufficient ACE by requiring payment of “deemed values”, set by the Ministry of Fisheries, for catch in excess of ACE. The regime recognises the likelihood of some continuing bycatch after a TACC has been reached, due to the interactions amongst fisheries, but deemed values escalate with higher levels of over-fishing so that stock sustainability is not compromised. Thus, the QMS balancing regime provides more flexibility to manage catch limits than can be provided in the non-QMS environment.
- 81 The Ministry of Fisheries is currently considering whether interim arrangements are necessary to address the implications of s.241 for non-QMS species. However, where catch needs to be constrained for sustainability reasons, or to meet international obligations, there may be costs in doing so that cannot be avoided. In some cases that can include constraining another fishery.

Bycatch issues

- 82 As noted earlier, surface longliners and purse seine vessels catch a wide range of non-target species, including several seabirds whose populations are considered “at risk” from fishing (Ministry of Fisheries and DOC, 2000). Excessive competition in the longline fishery detracts from fishers’ ability to target tuna more carefully and avoid non-commercial bycatch species, including seabirds. Marginal profitability, exacerbated by excess capacity, further hampers fishers’ ability to implement measures to reduce bycatch. Management issues related to seabirds and sharks are being addressed through another process (see section 1.3 above), but the effects on bycatch of fisheries management regimes, catch limits, and fishers’ profitability also need to be taken into account in setting HMS policy.

Commercial targeting of swordfish

- 83 In New Zealand, commercial targeting of swordfish is prohibited, but fishers can land and sell it as incidental bycatch. Of swordfish that are discarded, 62% are already dead (Murray et al., 1999). Landings of swordfish as bycatch in the tuna fisheries have risen dramatically in the last three to five years as surface longlining has increased.¹⁰ Circumstantial evidence, e.g. increasing catch of

¹⁰ Murray et al., 2001.

swordfish per unit of effort for tuna species, suggests that swordfish is being targeted by some commercial longliners. This has raised concern amongst recreational fishers for whom swordfish is a prized catch. The apparent disregard for commercial fishing regulations is also of concern to the Ministry of Fisheries.

- 84 An explicit decision may be required regarding the extent to which commercial targeting of swordfish will be allowed, e.g. based on the relative value to New Zealand of commercial and recreational catch. If commercial targeting remains prohibited, then means to enforce this rule are needed.

Treaty of Waitangi obligations

- 85 The 1992 Deed of Settlement for the Treaty of Waitangi fisheries claim requires the Government to introduce species into the QMS as soon as is practicable. In the Deed, the Crown agreed to give Maori 20% of quota for all new species introduced into the QMS and has given effect to this in s.44 of the FA96.

- 86 In settling litigation over the Government's delay in introducing the Foveaux Strait oyster fishery into the QMS, the Government in 1997 issued a policy statement that "all commercial non-QMS species should be introduced into the Quota Management System as quickly as practicable." An accompanying protocol stated that the Ministry of Fisheries would work with the Treaty of Waitangi Fisheries Commission to develop an operational framework that would cover, among other things:

(i) Consultation as to the means by which the Ministry might manage species prior to their introduction into the QMS and the extent to which such means might advance the interest of the Commission in acquiring an interest in the fishery prior to its introduction to the QMS;

(ii) Agreement that the introduction of each species will be managed in a way that is appropriate to it and that the Ministry would not exclude any option from consideration.

- 87 A review of non-QMS management was completed in 2001 by a working group that included a range of stakeholders including Maori. The review concluded that a key objective should be to get all species that require management intervention into the QMS, including all commercially targeted and significant fish bycatch species, and developmental species. The only species that would remain outside the QMS would be relatively less significant bycatch species and those species not caught at all.

- 88 Finally, a 2002 High Court decision¹¹ stated:

The transfer of all commercially usable stock to quota management is also assumed in the agreement with Maori as provided for in the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. The obligations thereby imposed are expressly recognised in s5 of the 1996 Act. In terms of the settlement the Fisheries Act sets aside 20% of all new quota for Maori. Maori do not receive

¹¹ *Kellian and others v. Minister of Fisheries and others*, CP 281/01, 295/01 and 40/02, 22 July 2002, Wellington High Court (Durie J), paragraphs 48 and 54.

that quota until then but when non-quota stock are fished commercially Maori are denied the quota to which they are entitled. Accordingly good reasons must exist for resources to be fished commercially outside the quota system.

...

The fact is that the principal tool, a total catch limit, is one for which the quota management system is uniquely adapted. As mentioned the quota system is the preferred system and the general expectation is that fisheries will pass to the quota management system unless there is some good reason why they should not.

- 89 The High Court decision in *Kellian* was upheld on appeal. The statements quoted above were not challenged in the appeal, but the Court of Appeal judgment (at paragraphs 35 and 36) appears to confirm that the Settlement Act is a valid reason to support using the QMS to manage a fish stock.

3 OBJECTIVES FOR HMS POLICY

3.1 Proposed objectives

90 New Zealand seeks to maximize the benefits it derives from the marine environment, including intangible and non-market benefits as well as financial returns from fisheries. This objective can be expressed as maximising benefits from fisheries subject to a number of constraints, i.e. meeting the constraints takes precedence over maximising financial returns. However, from a long term perspective, satisfying these constraints is likely to be consistent with maximising the financial returns from HMS fisheries. Without international co-operation on conservation and management, HMS fisheries would in time become depleted and uneconomic.

91 Based on the constraints identified in the previous section, and consistent with the Ministry of Fisheries Strategic Plan, the Ministry suggests the following objective for HMS policy:

To maximize the value that New Zealanders obtain through the sustainable utilisation of highly migratory species, subject to --

- ☞ participating in the establishment of, and complying with, regional measures to ensure the sustainability of HMS stocks,*
- ☞ ensuring the viability of associated and dependent species; avoiding, remedying or mitigating adverse effects of fishing on the wider aquatic environment; and complying with international obligations arising from agreements on biodiversity, fisheries management and related issues,*
- ☞ providing for foreign licensed access as appropriate, and*
- ☞ meeting the Government's obligations to Maori under the Deed of Settlement.*

92 This objective can be further elaborated as follows:

- (i) To develop and implement measures that support sustainable utilisation of HMS and other marine resources by --
 - a. Participating actively in RFMOs and implementing and operating an effective management regime that is consistent with UNCLOS and with measures adopted by RFMOs;
 - b. Managing fish and non-fish bycatch issues, including those associated with New Zealand vessels on the high seas;
 - c. Complying with international obligations arising from agreements on biodiversity, fisheries management and other relevant issues;
 - d. Ensuring that relevant legislation, measures and agreements can be enforced both inside and outside the New Zealand EEZ;

- (ii) To meet Deed of Settlement and associated obligations to Maori in respect of HMS; and
- (iii) To create a management structure that enables value to New Zealand to be maximised by --
 - a. Discouraging excess capacity and enabling optimal value to be obtained,
 - b. Providing for development of the New Zealand fishery for HMS, and
 - c. Managing competing interests of commercial, customary and recreational fishers.

3.2 Addressing excess capacity vs encouraging development

- 93 For under-utilised species that reside entirely within the New Zealand EEZ, introduction into the QMS can provide incentives for development and expansion. The Government sets the TAC, allocates quota to fishers, allocates 20% to Maori, and then sells any remaining quota. Quota owners, especially those who have purchased quota, then have an incentive to develop the fishery to get a return on their quota and enhance its value. This might not work as well, however, when there is no clear basis for setting the TAC, as is the case for several HMS stocks.
- 94 One of the challenges of HMS policy is to create a framework that discourages excess capacity without unduly hindering expansion of catch of under-utilised stocks. New Zealand might want to discourage excess capacity in some HMS fisheries while encouraging development of others. Alternatively, New Zealand might want to address management issues that exist within the New Zealand EEZ while encouraging expansion of fishing on the high seas for under-utilised stocks. Different management objectives might apply to different areas.
- 95 Excess capacity can be partially addressed by limiting access to the fishery, e.g. by limiting total fishing effort or by QMS introduction. Limiting effort can prevent new entry, but does not remove a ‘race for catch’ or necessarily prevent increased catch by existing participants in the fishery.
- 96 Introduction of a species into the QMS allows continued entry to a fishery through purchase of quota or ACE. This removes the incentive to expand effort to get quota, while improving incentives for investment in under-utilised fisheries by providing better security.
- 97 Distinguishing between those areas where some rationalisation may be desirable and areas where further expansion is appropriate, e.g. inside and outside the New Zealand EEZ, might allow a better fit between management tools and objectives. Different rules could be applied to different areas, at least as an interim measure. As the international management regime takes shape it will probably be desirable to bring all areas for a given species into the same management regime. Options along these lines are explored in sections 4 and 5 of this paper.

3.3 Compatibility with RFMO measures and controls in other coastal states

- 98 Given that New Zealand will be required to implement conservation and management measures agreed by RFMOs, the Ministry of Fisheries could take one of three approaches to this issue:
- (i) Wait for measures to be adopted by RFMOs and then implement corresponding measures in New Zealand;
 - (ii) Try to anticipate the measures that will be adopted and implement corresponding measures now; or
 - (iii) Implement measures that are best for New Zealand now and seek to minimize any transition costs that may arise from implementation of RFMO measures in the future.
- 99 The Ministry of Fisheries considers that the first option is not acceptable. There are domestic management issues (see section 2.5 of this report) that require action now. Waiting five or more years for RFMO measures, and then working through and consulting on the best way to implement them in New Zealand, means it could be several years before better management regimes are implemented.
- 100 The difficulty of anticipating what measures RFMOs will adopt in five or ten years, and the fact that implementing corresponding measures now might be contrary to New Zealand's interests, means that the second approach is likewise not acceptable.
- 101 Thus, this paper takes the third approach, implementing measures that are best for New Zealand now while being cognizant of potential transition costs. A short discussion of transition risks follows.
- 102 Some coastal states in the western and central Pacific region have adopted input controls (e.g. license limits or days at sea) while others have adopted output controls (catch limits) to manage tuna fisheries. This diversity of measures is likely to continue after national allocations are determined. Each country's measures will need to be compatible with and achieve compliance with RFMO management and conservation measures. The use of input controls by some states should not affect the viability of the QMS or another output-based measure as a management framework for New Zealand's HMS fisheries.
- 103 However, the situation would become more complicated if the RFMO itself adopted input controls (e.g. limited the number and type or size of vessels) to manage catch, though any such measures would almost certainly be with reference to maximum sustainable yield (MSY). New Zealand is likely to advocate catch limits as a more effective measure for managing catch. However, if New Zealand had introduced a species into the QMS and subsequently an RFMO introduced effort controls, New Zealand would need to ensure that its TAC was compatible and consistent with the RFMO measures.

3.4 Features of an HMS management regime

104 In order to achieve the management objectives proposed above and address current issues in the fisheries, a management regime for HMS stocks should have certain features. These should include:

- a. Flexibility to have or not have catch limits (or perhaps a mix of these inside and outside the New Zealand EEZ) and flexibility to transition from no catch limits to catch limits;
- b. Option to have different measures inside the EEZ and in international waters;
- c. Ability to control, i.e. limit, access to the fishery and discourage a race to catch fish;
- d. Transferability of harvest rights in the fishery;
- e. Ability to impose a range of sustainability measures, including input controls where necessary;
- f. Clear identification of any “beneficiaries” and “risk exacerbators” and thereby who should pay for any compliance and research;
- g. Ability to control New Zealand fishers outside the New Zealand EEZ (consistent with UNFSA), including reporting of out-of-EEZ catch against New Zealand quota and/or catch limits;
- h. Ability to achieve a high degree of compliance at reasonable cost;
- i. An appropriate share or access to Maori consistent with the Deed of Settlement;
- j. An appropriate share or access to recreational fishers; and
- k. Where appropriate, the ability to allow foreign licensed access to the New Zealand EEZ and impose appropriate conditions on that access.

4 OPTIONS FOR MANAGING HMS STOCKS

- 105 There are several options for how New Zealand might manage its share of highly migratory fish stocks. Some options may be best suited to fully developed fisheries, other options might suit fisheries with development potential, and others might be appropriate for fish bycatch that has little or no commercial value at present.
- (i) **Status quo** – Fisheries would remain open access without catch limits until a national allocation is determined by an RFMO, at which point a commercial catch limit would be imposed;
 - (ii) **Status quo then QMS** – Fisheries would remain open access with no catch limits *as an interim measure* but would be introduced into the QMS when a national allocation is determined or earlier if sustainability issues arise;
 - (iii) **Permit moratorium** – Option (i) or (ii) could be combined with a moratorium on new fishing permits for tuna species (from which tuna species are currently exempt);
 - (iv) **QMS** – Species would be introduced into the QMS with a TAC, quota allocation, etc. Decisions would be required on how to manage catch outside the New Zealand EEZ, how to resolve potentially different catch history years for fish bycatch, etc;
 - (v) **Modified QMS** – Legislation would be amended to enable species to be introduced into the QMS with flexibility to not have a TAC until a national allocation is determined (i.e., fishers would receive quota shares of an unspecified TAC). The Minister of Fisheries would be able to impose a TAC if necessary for sustainability reasons, due to international obligations, or to give effect to an approved fisheries management plan.
 - (vi) **Transferable effort entitlements** – The Government would limit total effort in a fishery, allocate rights to units of effort (e.g. number of vessels or number of hooks) and allow these to be traded. Catch limits would also apply to species with national allocations.
 - (vii) **Cooperative ownership structure** – The Government would allocate to fishers shares in a co-operative company that would have sole commercial fishing rights to harvest one or more HMS. As per the modified QMS option above, TACs would apply to species when national allocations are determined by RFMOs and in certain other situations.
- 106 This section describes some of the implications, advantages and disadvantages of these options for future management of HMS stocks. Although there is more space devoted to the QMS than the other options, this is because the QMS options raise numerous issues that need to be explored to enable valid comparisons with the other options.
- 107 These options, which primarily focus on controlling catch, do not preclude the use of other management measures, e.g. input controls to reduce fish and non-fish bycatch or other adverse effects, in conjunction with output controls. For instance, tori lines are likely to still be required on longline vessels to reduce seabird bycatch.

- 108 Some of the options are likely to lead to rationalisation of some HMS fisheries, reducing overcrowding and improving overall efficiency. However, rationalisation of a fishery, whether brought about through ITQs, transferable effort entitlements, or simply by poor returns in the fishery, can entail some short term socio-economic costs. For instance, if fishers based in smaller fishing ports choose to sell their ITQ to fishers operating out of larger ports, or exit the fishery by other means, this might enhance economic efficiency within the fishing sector overall but cause some adjustment costs within some coastal fishing communities. In an extreme case, most or all New Zealand's ITQ could be caught on the high seas or even in the EEZs of other coastal states by vessels not based in New Zealand. This could mean greater profits to New Zealand quota owners but less domestic crew wages and servicing revenue.
- 109 Under all options, provisions for recreational and customary access would remain essentially unchanged, in that the Minister would take account of non-commercial catch when setting catch limits. The option involving zero allowance for commercial catch could provide additional protection of non-commercial access through regulatory means. Under other options, non-commercial access could be enhanced via negotiated arrangements, e.g. fisheries plans.

4.1 The Status Quo

- 110 Currently, all tuna species in New Zealand waters are managed as open access fisheries, i.e. there is no limit on new permit holders or vessels entering the fisheries. For all except southern bluefin tuna, there are no commercial catch limits (CCLs). Under a CCL, there are no individual catch limits or entitlements, but the Ministry of Fisheries closely monitors catch via frequent reports from fishers and closes the fishery when it estimates the CCL will be reached. The Ministry also imposes gear restrictions via the commercial fishing regulations to reduce bycatch of fish and non-fish species.
- 111 Under a status quo approach to future management, tuna fisheries would remain open access. CCLs would be introduced for each species as national allocations are determined by the WCPFC.
- 112 For other (i.e. non-tuna) HMS, the strict status quo is not really an option, because the FA96 changes the nature of the "authority to fish" for a given species. On the fishing permit, there will no longer be a target species. Rather, all species taken must be "authorised stocks". This will require new permits to be issued once the existing permit moratorium has been lifted. Hence, for non-tuna HMS, a status quo approach would mean that these species would also become open access once the moratorium is lifted. CCLs would be imposed if needed.
- 113 If fish bycatch species were managed outside the QMS, then tuna fishers would not need to have ACE or pay deemed values¹² for any such species landed.
- 114 Advantages of a status quo approach are:

¹² Annual Catch Entitlement (ACE) is created annually from quota and can be traded separately. Deemed values are amounts set by the Ministry of Fisheries that must be paid for any QMS species landed if a corresponding amount of ACE is not held at the end of the reporting period.

- (i) New Zealand would be able to increase its catch of species for which there is scope for expansion;
- (ii) New Zealand could wait until regional organisations establish management measures and then implement these, thus avoiding the costs of implementing interim measures;
- (iii) For minor fish bycatch species, a status quo approach would mean that fishing for target species would not be hindered by balancing requirements for bycatch or limited by CCLs.

115 Disadvantages are:

- (i) Excessive competition would continue and probably worsen, meaning that profitability in the longline fishery would remain low and New Zealand would fail to realise maximum value from the catch of southern bluefin tuna;
- (ii) CCLs for tuna would result in wastage of valuable tuna after the season has closed as fishing for other species continues, and could effectively close the mixed tuna fishery in areas where there is a likelihood of unauthorised catch after the CCL is reached;
- (iii) CCLs for fish bycatch species, if required in future, could result in premature closure of valuable tuna fisheries and a race for catch prior to closure;
- (iv) Continued increases in vessel numbers could require increasingly strict regulation of fishing methods to address sustainability issues or to reduce fish and non-fish bycatch to acceptable levels;
- (v) Alternative arrangements would be required for the Crown to meet its obligations to Maori regarding access to fisheries; and
- (vi) New Zealand might be perceived by other countries in the region as not exercising “reasonable restraint” with regard to HMS.

4.2 Status quo then QMS

- 116 Under a “status quo then QMS” option, fisheries would remain open access with no catch limits as an interim measure, but each species would be introduced into the QMS when a national allocation is determined or earlier if sustainability concerns were to arise. Thus, southern bluefin tuna would be introduced into the QMS as soon as possible (e.g. 2004), and other species would be introduced into the QMS as national allocations were determined.
- 117 If the WCPFC were to establish input controls rather than catch limits for some species, these could be implemented by New Zealand as an alternative to the QMS for the relevant species, although there might still be reasons for introducing a species into the QMS.
- 118 There are some non-tuna species, e.g. minor fish bycatch species of no commercial value, for which national allocations may not be determined in the foreseeable future. Under the “status quo then QMS” option, New Zealand would introduce these species into the QMS if sustainability concerns were to arise, but would otherwise manage them outside the QMS.

- 119 QMS management of HMS raises a number of questions, including how catch outside the New Zealand EEZ would be accounted for, how quota would be allocated, and whether and how foreign licensed access would be provided. These issues and others are addressed in section 5 of this paper. Still, it is possible to identify the main pros and cons of this approach.
- 120 The main advantage of this option is that it would create incentives for rationalisation of effort once a species was introduced into the QMS. The main disadvantage is that national allocations for some tuna species may not be determined for several years, so problems in the fishery could persist for several years and might get considerably worse before a better management regime is implemented.

4.3 Permit moratorium

- 121 A moratorium on new permits for tuna species could apply to option (i) or option (ii). A moratorium would prevent new fishers from entering the fishery, and hence might be seen favourably by other countries in the west and central Pacific region, but it would not remove the existing ‘race for catch’ or other sources of inefficiency. In fact, because of the catch limit, the limited seasonal presence of HMS in the NZ zone, and the expectation of gaining catch history by increasing catch, the ‘race for catch’ might still intensify. A permit moratorium, as used in other fisheries in New Zealand, does not limit vessel numbers or vessel size. Under such a moratorium, a fisher is able to use any number of vessels to fish against a permit, and can even allow other companies to fish under the authority of the same permit. Thus a permit moratorium might not be effective at limiting effort.
- 122 A permit moratorium could be worded to prevent fishers from adding vessels or replacing existing vessels with new ones, but this could prevent the fishery from keeping pace with technological developments and cause it to become uncompetitive internationally. Even if only replacement vessels were allowed, the ‘race for catch’ could still intensify as fishers purchase bigger vessels to fish in all weather and further from shore in order to increase their catch.
- 123 A permit moratorium would therefore have similar advantages and disadvantages as the status quo, though it would give some financial advantage to existing permit holders. However, the Ministry considers that it is not possible to control catch effectively via effort controls, and that attempting to do so would entail high administrative and compliance costs.
- 124 Furthermore, once the FA96 takes full effect and the existing permit moratorium on other species is lifted, fishing permits will no longer list target species. All target and bycatch species would need to be “authorised stocks”. A moratorium on tuna permits would thus imply that tuna catch, including bycatch, would not be authorised except for those with existing tuna permits. Since all fisheries will need “new” permits to comply with the provisions of the FA96 once it is fully implemented, and these would preclude bycatch of tuna in other fisheries, this option is in fact not really viable.

4.4 The QMS

- 125 Under the “QMS option”, a species would be introduced into the QMS as expediently as possible, although some species might be delayed if there was substantial under-utilisation in the fishery and no RFMO decisions about national allocations. This option could also provide improved management of species that are primarily of recreational interest, by setting a low TACC.
- 126 Once a species has been introduced to the QMS, the main on-going management issue is the setting of the TAC by the Minister to provide for sustainable utilisation. Where there is an international agreement governing New Zealand’s catch limit for a species, s. 14 of the FA96 provides that the TAC would be based on the international agreement. As mentioned, New Zealand already has a national allocation for southern bluefin determined by international agreement.
- 127 The FA96 might require new provisions to govern the setting of the TAC for an HMS prior to international agreement on national allocations or other conservation and management measures. For instance, legislation could provide for the Minister to set a TAC for HMS taking into account the following:
- (i) The sustainability of the stock and the pressure on the stock from fishing in New Zealand waters;
 - (ii) Any international agreements, measures or resolutions regarding the stock;
 - (iii) The need to protect associated and dependent species and the aquatic environment consistent with Part II of the FA96;
 - (iv) Any approved fisheries management plan; and
 - (v) The desirability of allowing fishers to maximise catch.
- 128 In practice, this would mean that if criteria (i) – (iv) provided no compelling reason to constrain catch, the Minister would set a TAC based on the maximum that could be caught with existing harvesting capacity. If there were compelling reasons, then a constraining TAC would be set based on the relevant criterion of (i) – (iv) above. Once a TAC is set, the Minister could consider using s.14 of the Fisheries Act 1996 to increase the TAC temporarily during the season if more fish than expected were available that year, provided this was consistent with other constraints, e.g. protecting associated species. A minor amendment to s.14 might be required to provide for in-season TAC adjustment for HMS.
- 129 Once New Zealand’s national allocation is determined, the TAC would be set accordingly, with the possibility of stricter limits on the TAC if necessary e.g. to protect associated or dependent species.
- 130 For swordfish and perhaps other species that are primarily of recreational interest, it would be important to determine the extent of commercial catch that could be allowed consistent with recreational interests. Once determined, this could be implemented via a small TACC, e.g. to allow for unavoidable bycatch in the longline fishery. Deemed values would be set high enough to discourage targeting and excessive bycatch but would also seek to encourage landing of fish so that they are reported and not wasted as discards.

QMS management with more than one QMA

- 131 It might be most efficient to have a single quota management area (QMA) encompassing all fishing both inside and outside the New Zealand EEZ. However, it will probably be necessary to allow for more than one QMA outside the EEZ to provide for the possibility that the WCPFC, for instance, might choose to divide the region into management areas for the purpose of conservation and management measures.
- 132 If there are efficiency issues within the EEZ that suggest that some rationalisation of a fishery would be beneficial, the government could establish separate QMAs for in-zone and out-of-EEZ areas. In this case, the in-zone TAC could be set to encourage rationalisation of effort, while the out-of-EEZ TAC could be set to allow fishers to maximise their catch provided there were no other reasons to constrain catch.
- 133 Alternatively, fishing within the EEZ could be introduced into the QMS with out-of-EEZ fishing left outside the QMS as an interim measure. Once an RFMO determined New Zealand's national allocation, or if there were other compelling reasons for management controls, the out-of-EEZ area would be introduced into the QMS. This would be done as a separate QMA to recognise the catch history of those fishing outside the EEZ. The out-of-EEZ QMA could later be merged with the in-zone QMA to allow fishers to catch their quota virtually anywhere, or it could be retained as a separate QMA. Grounds for retaining more than one QMA could include, e.g., the need to manage competition between commercial and non-commercial interests. Any such proposals would need to be considered carefully because of the risk that multiple QMAs would interfere with efficient utilisation.
- 134 It is proposed that legislation would need to allow for multiple QMAs, but the actual number and boundaries of QMAs for a particular species would be determined if and when a species is introduced into the QMS, based on RFMO measures, efficiency issues, fish and non-fish bycatch considerations and possibly other factors, and after consultation with stakeholders.

Pros and cons of QMS management

- 135 For HMS fisheries, as for fisheries wholly within New Zealand fisheries waters, QMS management via Individual Transferable Quota (ITQ) has the following advantages:
- (i) ITQ eliminates the incentives that cause a 'race for catch', reducing excessive investment in gear, allowing fish to be taken when they are in optimal condition and thereby increasing the financial returns from the fishery;
 - (ii) Improved profitability and elimination of the 'race for catch' would enable fishers to improve their targeting methods and reduce fish and non-fish bycatch;
 - (iii) Under the QMS, fishers pay deemed values after ACE is exceeded, whereas closure of a fishery under a CCL could significantly constrain all other fisheries in which the CCL species might be taken as bycatch.

- (iv) ITQ enables harvest rights to be transferred to the most efficient fishers while providing tangible equity as collateral for raising capital;
 - (v) Transferability allows quota owners to sell ITQ should they choose to exit the fishery;
 - (vi) TACs can be set to enable fishers to maximise their catch unless there are compelling reasons for the Government to constrain catch; and
 - (vii) ITQ enhances fishers' long-term interest in sustainable management of the fishery because they have an incentive to protect their equity interest (ITQ).
- 136 In addition, QMS introduction is the agreed mechanism for the Crown to meet its on-going obligations to Maori under the Deed of Settlement.
- 137 Potential disadvantages of managing HMS via the standard QMS include:
- (i) There is no obvious basis for setting the TAC for highly migratory species until there are conservation and management measures from an RFMO;
 - (ii) A fixed TAC could prevent New Zealand fishers from taking advantage of year-to-year variability in the number of fish present in the NZ EEZ unless provisions were made to review TACs during the fishing season or an approved fisheries plan resulted in a TAC that accommodated variability;
 - (iii) ITQs could encourage high-grading of catch, although this could be mitigated by increased monitoring – e.g. the scope for increased observer coverage or video monitoring of vessels may need to be investigated;
- 138 As noted above, fishing for a given species within the New Zealand EEZ, or specific parts of the EEZ, could be introduced into the QMS while fishing for that same species elsewhere was managed outside the QMS as an interim measure.

4.5 Modified QMS

- 139 Another option to consider is managing tuna stocks under a modified form of the QMS, i.e. to amend the FA96 to provide flexibility to not have a TAC until a national allocation is determined. The Minister of Fisheries would also be able to impose a TAC if necessary for sustainability reasons, or to give effect to an approved fisheries plan.
- 140 Introduction of a species into a “modified QMS” would entail allocation of quota shares based on catch history (see section 5.1), but until there was a TAC these would not have a tonnage equivalent. Due to the lack of a TAC, there would be no basis to determine whether the Crown would retain any quota, so the probable scenario is to allocate 80% of shares to existing fishers and 20% to the Treaty of Waitangi Fisheries Commission.
- 141 A modified QMS would be implemented using existing QMS provisions to the maximum extent possible, but while there was no TAC there would be no ACE and the species would most likely be exempted from the catch balancing regime. As soon as a TAC were set, whether for sustainability reasons, based on RFMO

measures, or to give effect to an approved fisheries management plan, ACE would be generated by quota in accordance with s.66 of the FA96 and the balancing requirements would take effect.

- 142 Until a TAC were set, a fisher would only need to hold a small amount of quota to fish, and could land an unlimited amount, but there would be no catch history to be gained through continued fishing because quota shares would have already been allocated and distributed. This would provide better incentives for investment and cooperation than continued open access would provide. Some minimum quota ownership could be set to discourage excessive entry into the fishery. Minimum holdings would also provide fishers with an incentive for investment and cooperation in the fishery.
- 143 Even where there are no sustainability concerns, quota owners might find it beneficial to have a TAC implemented so as to give greater value to quota and encourage rationalisation of effort in the fishery. Under a modified QMS, quota owners could initiate implementation of a TAC through the fisheries plan process.
- 144 It would also be possible to have multiple QMAs, e.g. inside vs. outside the EEZ. This would create flexibility to have a TAC in one QMA but not another if there were sound reasons for doing so.
- 145 It is important to emphasize that the “modified QMS” option would only apply to a species until New Zealand’s national allocation was determined. At that point, the TAC would be set based on the national allocation and the standard QMS provisions would apply. The “modified QMS” approach is therefore *not* an option for southern bluefin tuna, because New Zealand already has a national allocation for that species.

Pros and cons of a modified QMS

- 146 The arguments for and against the “modified QMS” option are much the same as for the standard QMS option. One difference is that under the modified QMS option, rationalisation of over-crowded fisheries (excepting southern bluefin tuna, for which this approach is not an option) might take longer than with the standard QMS option. This is because it would take time for quota owners to develop an agreed approach, including the level of the proposed TAC, to incorporate in a fisheries management plan. Conversely, the modified QMS would not constrain developing fisheries by imposing a TAC until there were good reasons to do so. It is envisaged that the modified QMS would require only minor amendments to legislation.
- 147 As with the QMS option, there might be one or more tuna species (e.g. skipjack) for which New Zealand catch can be considerably expanded without jeopardising the sustainability of the stock. For these stocks, management by way of a modified QMS would impose some cost on the entry of new fishers to these fisheries but would give those fishers with shares a strong incentive to develop the fishery. Past experience has been that where quota is not limiting catch, the price of quota is near zero. Hence, the cost of entry to under-exploited fisheries is likely to be low.

4.6 Transferable effort entitlements

- 148 Another option for HMS is to control fishing effort rather than, or in addition to, controlling catch. Creating transferable effort entitlements would be one way of doing this without hindering rationalisation in those fisheries where this could improve efficiency. Some industry representatives have promoted consideration of this option. Once a national allocation is determined, a catch limit would also be needed.
- 149 A regime based on transferable effort entitlements would require the Government to set a limit on the total effort allowed in the fishery. Effort could be expressed as number of hooks set or days fished. If, for example, longlining was limited by number of hooks set, then different measures of effort would be required for other fishing methods, meaning that entitlements would not be transferable between fishing methods.
- 150 The regime could entail one or more effort management areas, each with its own limit on fishing effort, similar to QMAs. As discussed under the QMS option (see section 4.4 above), some areas, e.g. outside the New Zealand EEZ, could remain open access until national allocations were determined or there were sustainability (including fish or non-fish bycatch) or efficiency grounds to limit effort.
- 151 Once the total effort limit were set, the Government would need to allocate effort entitlements to individual fishers. As for quota, effort entitlements would be allocated based on catch history, as described in section 5.1 below. Once allocated, entitlements would be freely transferable within specified effort management areas.
- 152 CCLs would be used in addition to effort entitlements where national allocations had been determined or there were sustainability grounds to limit catch. Once a CCL is imposed, the advantages of an effort-based regime are diminished as fishers begin to compete to catch as much as they can prior to closure of the fishery. This problem could be mitigated by requiring effort to be spread throughout the season, but this would interfere with efficiency and increase compliance costs. Instead, the total effort allowed would probably be reduced. Alternatively, a species could be moved into the QMS at this point, but that would entail a second allocation process that would inevitably be contentious, e.g. because of the need to convert effort entitlements from different fishing methods into tonnages.
- 153 The Australian Fisheries Management Authority (AFMA) has decided to implement a transferable effort entitlement system based on “hook days” for the Eastern Tuna and Billfish Fishery, possibly as early as July 2003. The main species in the fishery are yellowfin tuna, bigeye tuna and swordfish. Southern bluefin tuna is mostly fished as a separate fishery and has been managed by ITQs since 1989. However, it also occurs as bycatch in the Eastern Tuna and Billfish Fishery, where fishers are now required to have a minimum amount of southern bluefin quota prior to going fishing.

- 154 New Zealand has moved away from input-based management, and implementation of such a regime is likely to entail additional costs in terms of legislation and establishment of new administration and compliance systems.

Pros and cons of effort entitlements

- 155 Management based on effort entitlements has some advantages:

- (i) It enables effort to be transferred between willing buyers and sellers, much like quota;
- (ii) It does not limit catch until there are reasons to do so, allowing catch to increase during years of high availability; and
- (iii) It does not create incentives for high-grading or discarding of catch, which can occur with ITQs;
- (iv) Hook sets or vessels days can be monitored by vessel monitoring systems, avoiding the need to carry observers to monitor vessels crossing QMA or EEZ boundaries on fishing trip;
- (v) Once a national allocation was determined for a species, New Zealand would have the flexibility to use commercial catch limits or move the species into the QMS.

- 156 On the other hand, management via effort entitlements also has disadvantages:

- (i) It does not address ‘race for catch’ for SBT or, in future, other species with catch limits that encourage inefficient competition amongst fishers;
- (ii) The effort limit would probably need to apply to all tuna species combined and would do nothing to encourage targeting of species that are relatively under-utilised;
- (iii) An effort limit could mean that some species are under-caught; this could become a frequent occurrence as the need to control catch of one species, e.g. SBT, would determine the total effort allowed in the fishery;
- (iv) An effort limit constrains a fisher’s flexibility to adjust fishing practices in order to increase efficiency;
- (v) It is difficult to make the effort units comparable across different fishing methods, so transfer of effort between gear types is inhibited;
- (vi) The effort limit would lead to inefficiencies over time as fishers developed better fishing techniques and bought bigger vessels to get around the effort limit – New Zealand’s experience is that effort controls are an inefficient way to manage fisheries;
- (vii) Effort limits need to be adjusted over time as uncontrolled inputs are intensified and catch per unit of “limited effort” increases;

- (viii) An effort limit sends a perverse signal in terms of the type of measures New Zealand is likely to want the WCPFC to adopt (output controls);
- (ix) New Zealand has moved away from management based on effort controls; designing and implementing a new system is likely to entail higher management cost than other options, at least initially;
- (x) Effort limits would not trigger deemed values for fish in excess of the CCL, and hence would not resolve the constraints on the mixed tuna fishery when the SBT CCL is reached.

4.7 Cooperative ownership structure

- 157 The Ministry of Fisheries is interested in the views of stakeholders on a possible new option for future fisheries management, involving cooperative ownership of fishing quota. This option would require consultation and development before it could be implemented for HMS or any other species, but could potentially offer greater value to New Zealand from aquatic resources than existing ownership structures. This is likely to be especially true where the development or rebuilding of a fishery requires strong collective action.
- 158 This option would vest harvesting rights to HMS in cooperative companies¹³ and allocate shares in those companies to commercial fishers. There could be one company for each species, or potentially one company could have harvesting rights to more than one species. Shares in such a company would represent voting rights and rights to share in profits, but not a right to go fishing. To go fishing would still require a fishing permit and, importantly, would require access to quota and/or ACE from the company. The company could distribute harvesting rights to fishers in proportion to their quota shares or in some other manner that maximised long term returns to the company.
- 159 Shares in the company would be allocated as under the QMS options: catch history for the initial allocation, with remaining shares allocated by catch history, preferential tender, or open tender (see section 5.1). If shares were allocated in advance of a TAC (as per the ‘modified QMS’ option), then it is likely that all shares would be distributed and none would be retained by the Crown.
- 160 Apart from the ownership structure, implementation of this option would be as for the “modified QMS” option. For instance, there would be flexibility not to have a TAC unless or until (a) national allocations were determined, (b) there were sustainability grounds for action under the FA96 (e.g. for bycatch or habitat reasons) or (c) a TAC was necessary to give effect to an approved fisheries plan.
- 161 Establishing appropriate procedures and structures would require new legislation, e.g. to enable allocation of quota to the jointly-owned company. The company could decide how best to maximise its returns and deploy vessels and other

¹³ The company would be a cooperative in the sense that ownership shares would be distributed to fishers, but it would follow company governance structures in that voting, benefits and liabilities would be in proportion to ownership of transferable shares. Townsend (1995) noted that cooperative governance structures can create perverse investment incentives if financial returns to individual members are based on volume (e.g. quantity of fish harvested) rather than shares in the company itself. For example, if a fisher’s share of returns is based on the fisher’s catch as a proportion of the company’s total harvest, the fisher has an incentive to invest in additional harvesting capacity even though this might not be efficient from the company’s viewpoint. The structure proposed here would avoid this by having returns based on shares in the company, not on the volume of fish caught by an individual member.

resources, including on the high seas. Companies would develop their own governance arrangements, although the minority shareholder provisions in the Companies Act would also apply.

- 162 One example of a fishery managed under a company structure is the southern scallop fishery (Arbuckle and Metzger, 2000). Although this fishery is obviously very different than the HMS fisheries, it nonetheless provides a useful example. The Challenger Scallop Enhancement Company was formed in 1994 by southern scallop quota owners to fund enhancement and further research on the fishery. While in the Challenger case quota is still held by individual fishers, it is the company that makes decisions each year on closed areas and areas for commercial and recreational fishing to implement its rotational harvesting programme. This is only done after consultation with other stakeholders, which is monitored by the Ministry of Fisheries. The recreational sector and iwi benefit by having access to areas that have been enhanced by the company but are closed to commercial fishing. Naturally seeded areas may also be closed to commercial fishers to provide for improved non-commercial access by agreement. The company also operates its own compliance programme to make sure fishers keep to the rules.
- 163 For species managed under this option, recreational and customary access would be provided as it is currently under the QMS. The Minister would determine the estimated take by recreational and customary interests and set the TACC, if any, accordingly. There would, however, be scope for the company to reach an agreement with the other sectors regarding management of the stock, e.g. through a fisheries management plan, as the Challenger company has done.
- 164 The potential advantage of applying this approach to HMS management is that a commercial structure such as a company might be better suited to pursuing commercial objectives than a stakeholder organisation consisting of quota owners. It might be better at deploying fishing resources to obtain maximum return within and especially beyond the New Zealand EEZ, where this could be enhanced by fishers working together.
- 165 This approach would require further elaboration, based on consultation with all stakeholders in HMS fisheries, and significant changes to legislation, meaning it could take time before a model acceptable to all stakeholders were developed and implemented – even then, shareholders would need to agree on management strategies and allocation of fishing rights, all of which would take time;
- 166 Another potential disadvantage is that a company structure could have differential impacts on existing fishers – while all would get an equal return on their company shares, the company might decide to use the vessels and other gear of some fishers and not others, meaning that some could face financial losses.

4.8 Additional comments on the choice of options

- 167 The Ministry of Fisheries is seeking feedback on which of the above options should be further developed for implementation for one or more HMS in the coming years. For any HMS to be introduced into the QMS, there would be further consultation with stakeholders prior to introduction, e.g. on QMA boundaries and other issues.

- 168 As well as general commentary on the range of options, the Ministry is interested in stakeholder views about which options should be implemented for which species, bearing in mind that to the extent possible most species should be managed in a similar fashion. Different regimes might be appropriate for associated and dependent species that occur infrequently in the fish bycatch, for instance, and for some commercial species it might be appropriate to delay implementation of the preferred long-term regime until after New Zealand's national allocation is determined.
- 169 The cooperative ownership option raises numerous issues that would need to be resolved through consultation and discussion, and hence it might not be appropriate to consider implementing this option for HMS as early as October 2004. The Ministry of Fisheries is nonetheless interested in stakeholder views on the merits of this sort of approach for future fisheries management.

5 DETAILED ISSUES FOR MANAGEMENT OPTIONS

- 170 For any HMS introduced into the QMS or a variation thereof, there would be a number of issues to resolve. This section seeks to explain how the QMS might be applied to tuna and other HMS stocks so that stakeholders can evaluate and compare all the options.

5.1 Allocation of quota or other harvesting rights

Allocation options

- 171 The Ministry of Fisheries proposes to use catch history as the basis for the initial allocation of quota for any tuna or other HMS introduced into the QMS or one of the variations thereof (including effort entitlements) described in Chapter 4. This would include recognising catch history for catch outside the New Zealand EEZ, provided that sufficient data are available and that New Zealand gets credit for this catch in its national allocation based on decisions by the relevant RFMO.
- 172 Tuna species are exempt from the catch history years specified in the FA96, so the qualifying years will be set by the Minister of Fisheries and given effect by Gazette notice. The Minister has recently announced his intention to set qualifying years for tuna as years already past to discourage the speculative rush of ‘fishing for quota’.
- 173 The Minister also stated that he is not opposed to responsible expansion of effort in fisheries that are under-utilised or have room for an increase in capacity. He is therefore willing to consider different catch history years for fishing outside of New Zealand’s Exclusive Economic Zone (EEZ), where there are few if any problems of excess competition. Skipjack tuna might also warrant separate consideration, as it may be a relatively under-utilised fishery. If catch history is to be determined differently for some situations or species, it would be useful to decide and announce, as part of the HMS management framework, how catch history will be determined for those situations, in order to provide investment certainty to fishers. Fishers are invited to make submissions on these questions and on the specific years and mechanisms to be used. Whether and how catch history actually gets used will depend on what options are ultimately chosen for the different species.
- 174 For any unencumbered quota held by the Crown after the initial allocation, there are two options for further allocation. (Note that under the modified QMS, transferable entitlements and cooperative ownership options, there would in many cases be no initial TAC and hence no unencumbered quota retained by the Crown.) The two options are:
- (i) Fair market price tender
 - (ii) Highest price tender
- 175 A tender could be conducted, but a mechanism applied to ensure that those participants who offer the highest bid, once bids are ranked, only pay a fair market price. This is sometimes referred to as a clearing price tender. A highest price tender would simply provide the quota to the bidders offering the highest price.

- 176 For non-tuna species, qualifying years for catch history have been set in legislation. These should be the basis for allocation of quota when a species is introduced into the QMS or a QMS variant because some fishers have relied upon that information when making investment decisions. However, it may be appropriate to consider additional mechanisms for fish bycatch species in the tuna fisheries; this is considered below at paragraphs 181ff.

Quality of available catch data

- 177 Catch and effort data for tuna species are “below average” in quality. The Ministry of Fisheries first imposed comprehensive mandatory reporting requirements on vessels fishing outside the New Zealand EEZ from 1 May 2001, when Part 6A of the FA96 came into force. These permits have recently been renewed with some minor amendments. Prior to this date, tuna caught outside the New Zealand EEZ and landed in New Zealand would probably have been reported, according to Ministry of Fisheries staff, along with fish caught inside the EEZ. Location of catch (i.e. inside or outside the EEZ) can be worked out using latitude and longitude data.
- 178 Poor data quality means that pre-allocation validation and reviews could be time-consuming for both the Ministry and for fishers, especially if multiple QMAs are defined. Data rules will be needed to sort out incorrectly completed catch and effort returns, which will inevitably lead to some disputes.
- 179 The Ministry proposes that, if catch history forms part of any quota allocation process, the process would be similar to that used in other fisheries. The Ministry would validate data and send it to eligible fishers, who would be entitled to object if they believed the Ministry's records were incorrect. Once such objections were decided, the Ministry would allocate Provisional Catch History (PCH) to each eligible fisher. The allocation of PCH could be appealed to the Catch History Committee on limited grounds (i.e. that the PCH does not reflect a fishers lawfully caught and lawfully reported tuna catch in the criteria years).
- 180 The Ministry proposes that the eligibility criteria should be:
- (i) The person held a commercial fishing permit authorising the targeting of tuna on the last day of the criteria period; and
 - (ii) The fisher, in the criteria years, lawfully caught and lawfully reported tuna catch to the Ministry (consistent with paragraph 172 above, the Chief Executive would not consider, in any catch history calculation, returns lodged with the Ministry after 15 October 2002); and
 - (iii) The fisher continues to hold a permit on the date that the Minister declares tuna to be subject to the QMS or other regime with individual fishing rights.

Mismatch of quota for target and fish bycatch species

- 181 Regardless of which allocation method or catch history years are chosen for tuna species, there is likely to be some quota “mismatch”. If 1990-91 and 1991-92

were used as qualifying years for tuna as well as for fish bycatch species, then tuna fishers who entered the fishery after 1992 would not have quota for either tuna or bycatch. However, if 1990-91 and 1991-92 were used as qualifying years for bycatch species only, and more recent years were used for tuna, fishers that entered the fishery or expanded their operations after 1992 would still not have sufficient quota for bycatch species.

- 182 Given the likely value of some of the tuna quota compared to the value of bycatch species, and the more recent development of some tuna fisheries, a mismatch between quota for target and bycatch species would seem to be the smaller problem. In most cases, a target/bycatch mismatch would probably result in relatively lower financial costs for fishers. To continue their current fishing practices, fishers would buy quota for bycatch species instead of high value quota for tuna. This is another reason why later years, rather than 1990-91 and 1991-92, are preferable as qualifying years for tuna species.
- 183 For some bycatch species, depending on the management option chosen, the Crown could be left with unallocated quota after introduction (how much cannot be determined until rather late in the QMS introduction process). If this situation arises, the Government could consider ensuring that tuna fishers are able to obtain quota they need for bycatch at a fair market price.

Allocation to Maori

- 184 The question of how much quota for tuna species should be allocated to Maori has various elements. Some stakeholders have suggested that there is no need to give any allocation to Maori, because the tuna fisheries were largely developed after the Deed of Settlement was signed and are still open access fisheries. It could be argued that Maori have had the same opportunity as everyone else to become involved in the fishery, but have chosen not to.
- 185 However, the fact that southern bluefin tuna is listed on the Fourth Schedule of the FA96 suggests that an allocation of 20% to Maori was anticipated when the FA96 was passed. Furthermore, the Treaty of Waitangi (Fisheries Claims) Act 1992 makes no distinction between in-zone and out-of-EEZ fishing, but refers only to “commercial fishing”. Section 44 of the FA96 suggests that the Crown’s obligation to allocate 20% of quota to Maori allows for no distinction between catch inside and outside of New Zealand’s EEZ.
- 186 It is possible that some tuna fishing operations would no longer be viable if they had to reduce their catches by 20% as a result of the Crown obligation to Maori. However, fishers would be compensated for reduction in southern bluefin quota because this species is listed on the Fourth Schedule of the FA96. For those exiting the fishery, compensation for southern bluefin and gain from selling any quota received might or might not make up for any losses incurred when selling their vessel and equipment. If tuna species are not introduced into the QMS, some other means would be required to meet the Crown’s obligation to Maori, and this could have a similar effect on other fishers.

5.2 Fishing in other nations' EEZs

- 187 Under the status quo option, any national allocation determined by an RFMO would be managed by a competitive CCL. The government would need to decide how to respond to requests to fish against New Zealand's allocation in the EEZ of another coastal state.
- 188 Presently, New Zealand fishers are allowed to fish against New Zealand's allocation in the New Zealand EEZ and anywhere on the high seas. Extending this to other countries' EEZs would allow New Zealand fishers to harvest fish wherever it was most efficient to do so. (Note that, in accordance with UNCLOS article 62, fishing in another country's jurisdiction is at the discretion of the coastal state and subject to license fees and conditions of access.) A proposal to fish in another EEZ could be driven by marketing, processing or other opportunities, and denying permission could mean that New Zealand would lose those opportunities. Fishing in another EEZ could also give New Zealand fishers access to lower labour and provisioning costs. This would allow them to compete more effectively in the marketplace, but might reduce flow-on benefits to New Zealand.
- 189 On the other hand, granting permission to fish in another EEZ against New Zealand's allocation could aggravate a 'race for catch'. For instance, if a species were present in another nation's EEZ before arriving in New Zealand, then some fishers might seek permission to fish in the other EEZ to get the fish earlier and thereby increase their share of the catch before the fishery closes. Other fishers, of course, would have the same opportunity. The question is whether, overall, this option would increase or decrease net returns from New Zealand's allocation. Note that if and when such a species were introduced into the QMS, this problem disappears because the catch limit is no longer competitive. A company wishing to increase its share would have to acquire additional quota or ACE or make other arrangements with other quota owners.
- 190 New Zealand would also be mindful of its obligations with respect to regional conservation and management measures. As New Zealand does not have primary enforcement jurisdiction over its fishers in the EEZ of another country, access by New Zealand fishers to another country's EEZ should occur only where there is a bilateral arrangement to ensure compliance with regional measures. Such an arrangement would outline the understandings on compliance, surveillance and monitoring in respect of New Zealand vessels.
- 191 The Ministry of Fisheries is interested in stakeholders' views on whether fishing against New Zealand's national allocation should be allowed in other countries' EEZs if New Zealand has implemented a commercial catch limit for the species (i.e. if the species is not being managed in the QMS).

5.3 Reporting of catch – in other nations' EEZs

- 192 For HMS introduced into the QMS, unless there were special circumstances (discussed below), all catch by New Zealand vessels in the EEZ of another country would be counted against the other country's allocation.

- 193 The only qualification to this requirement would be where the government responsible for that EEZ had a signed agreement with New Zealand, including an agreement to provide catch data (this is discussed in section 5.2 above).
- 194 The New Zealand Government could decline to sign such an agreement if, in its judgement, the foreign government was not fully complying with RFMO measures or could not ensure an appropriate quality of reporting on the New Zealand vessel. If there were no Government-to-Government agreement, then any coastal state that granted New Zealand vessels or nationals access to their EEZ would have to count the vessel's catch against their country's national allocation (although this might be disputed by the coastal state).

5.4 Reporting of catch – on the high seas

- 195 High seas catch by New Zealand vessels would be counted against New Zealand's allocation. This will apply even where New Zealand nationals or vessels are fishing without a valid permit, to ensure that the regional catch limit is not over-caught due to illegal activity (see Part 6A of the FA96).
- 196 A vessel operating on the high seas under a qualifying permit from another country is the responsibility of that country, including having the vessel's catch counted against that country's allocation. Section 113E of the FA96 provides that such permits are only recognised by New Zealand if the issuing government is a party to the UN Fish Stocks Agreement, the FAO Compliance Agreement, or the relevant fisheries management organisation¹⁴.
- 197 Conditions on fishing outside the EEZ could be imposed via regulations or conditions on fishing permits. These could include, for example:
- (i) Reporting requirements including specifying the QMAs against which catch must be declared, plus procedures for observation of any transportation of fish across QMA boundaries;
 - (ii) Requirements to hold ACE for fish caught;
 - (iii) Other compliance requirements e.g. to give effect to RFMO conservation and management measures.

5.5 Compliance issues

- 198 Achieving management objectives requires a reasonably high degree of compliance with management measures. Compliance issues need to be taken into account, therefore, in considering management options. As a general rule, the more complicated the management structure, the more difficult compliance will be for fishers and the more difficult it will be for the government to enforce. For instance, if different rules apply inside and outside the EEZ for a single fishery that operates on both sides of the EEZ boundary, compliance risks would increase. This would require additional compliance measures and resources or, in the absence of these, management objectives would be undermined.
- 199 One possible compliance measure would be increased observer coverage of vessels fishing for HMS. The official observer programme focuses primarily on

¹⁴ The criteria are actually subtler than this; see s.113E of the FA96 for more details.

collection of scientific data at present, although compliance objectives also play a role in determining placement of observers. If observers' compliance functions were to increase, this could negatively affect the working relationship between fishers and observers and compromise scientific work. As indicated earlier, there might be scope for use of video monitoring or other techniques, so that scientific observers could focus on research tasks.

- 200 If a cooperative ownership structure were adopted for one or more HMS fisheries, it would be important to specify clearly what measures the government would be responsible for and what would be left to the cooperative to manage amongst its members. Liability of directors, shareholders and their agents for any compliance breaches would also need to be clearly specified.
- 201 Some of these matters can be clarified in New Zealand legislation; other matters can be addressed by RFMOs adopting conservation and management measures for HMS. The more clarity on these issues that can be achieved, the less confusion there will be regarding compliance and one would expect a correspondingly higher degree of voluntary compliance with management measures.

5.6 Foreign licensed access

International obligations and NZ legislation on foreign access

- 202 Under article 62 of UNCLOS, New Zealand has an obligation to promote optimum utilisation. Where New Zealand does not have sufficient capacity to harvest the total allowable catch in the New Zealand EEZ¹⁵, it has an obligation to provide interested states access to the surplus resources. For highly migratory stocks, New Zealand has an obligation under article 64 to co-operate to ensure conservation and to promote optimum utilisation throughout the region.
- 203 Part V of the Fisheries Act 1996 and the Fisheries (Foreign Fishing Vessel) Regulations 2001 govern foreign licensed access to New Zealand's EEZ. Part V says that the Minister of Fisheries must, from time to time, determine a foreign allowable catch for each fish stock in the EEZ. The method of calculating the foreign allowable catch depends on whether the stock is managed in the QMS.
- (i) For a QMS stock, foreign allowable catch is the lesser of-
- a. The portion of the TACC that may be taken in the Exclusive Economic Zone (i.e. excluding the Territorial Sea, which goes out to 12 nautical miles); and
 - b. The amount of Annual Catch Entitlement ("ACE") still owned by the Government after the Government has offered its ACE for sale to all persons entitled to own quota.
- (ii) For a stock that is not in the QMS, foreign allowable catch is the lesser of-
- a. The portion of the catch limit (if any) that may be taken in the Exclusive Economic Zone; and

¹⁵ Note that the EEZ does not include the territorial sea, i.e. the area within 12 miles of the coast. Refer to footnote 6.

- b. The catch that is sustainable after taking into account domestic harvesting capacity. Domestic harvesting capacity means total commercial take from the previous year, with appropriate adjustments for commercial investment and catch trends, non-commercial take, and scientific take.
- 204 Part V goes on to provide for the allocation of the foreign allowable catch among foreign countries and the issuing of licences to foreign fishing vessels.
- 205 The management framework for highly migratory species must enable the Government to meet its international obligations regarding foreign licensed access. For fully allocated QMS stocks that reside entirely within the EEZ, applying Part V means in practice that the foreign allowable catch is zero for these stocks, since New Zealand has capacity to utilise them fully and the Government does not generally hold any quota. But if highly migratory species were introduced into the QMS, Part V would not work very well.
- 206 The situation for southern bluefin tuna (SBT) provides a useful example. If SBT were introduced into the QMS, the Ministry of Fisheries would most likely set the TAC equal to New Zealand's national allocation of 420 tonnes, the quota for which would be distributed to New Zealand fishing companies. "Foreign allowable catch" as determined under the FA96 would be zero, and there would be no quota or ACE left for the government to distribute to foreign interests, even though there could be surplus SBT in the New Zealand EEZ e.g. if there were more SBT in the NZ EEZ than usual.
- 207 Allowing foreign access for SBT would almost certainly be controversial anyway, and the New Zealand Government might have various reasons to decline access. However, similar legal issues apply to other tuna stocks, and New Zealand has treaty obligations to allow US vessels access to skipjack tuna, for instance. Also, it is probably in New Zealand's longer-term interests as a fishing nation to allow foreign access to the New Zealand EEZ when there are surplus fish available, to support the case for access to fish in the EEZs of other countries. New Zealand legislation needs to provide for foreign licensed access in appropriate circumstances, consistent with international obligations and New Zealand's longer-term interests.

Proposed policy on foreign licensed access

- 208 The only viable option appears to be amending the FA96 (e.g. ss.20ff) to provide, for highly migratory species in the QMS, a different process for determining foreign allowable catch. This would enable the Minister to allow foreign access provided foreign vessels were complying with New Zealand and RFMO measures, including relevant national allocations. In deciding whether and under what conditions to allow foreign access, the Minister could consider other factors, e.g. the degree of potential interference with New Zealand fishers.
- 209 Restricting foreign access to tuna stocks in the New Zealand EEZ might protect existing New Zealand fishers, by making it easier for them to realise their catch, but it could work against the overall efficiency of the regional fishery. Similar logic applies to purely domestic fisheries in which stocks are mobile: dividing up

the EEZ into small blocks to protect individual fishers makes little sense if, when fish move between zones, the small QMAs prevent some fishers from realising their quota in an efficient manner. Hence, especially if New Zealand seeks to expand its distant water fishing capacity, it should be cautious about taking or supporting measures that interfere with efficient harvesting strategies.

- 210 It is worth noting that New Zealand is on the margin of the range for most tuna stocks – there are much better fishing grounds elsewhere in the region. With the exception of the highly valued SBT, foreign interest in fishing for tuna within the New Zealand EEZ is low. New Zealand may therefore have an interest in setting up access frameworks, consistent with RFMO measures, that would allow New Zealand fishers to have access to surplus fish in other countries' EEZs.
- 211 This conclusion, that efficient harvest under a QMS approach requires that there be no arbitrary (i.e. non-biological) QMAs or restrictions on foreign access, only holds if there is a reasonable expectation that every quota owner will be able to catch his or her allowed catch. If this does not hold true, i.e. if there is no regional TAC or it is set too high, then an efficiency-destroying race for fish can develop and hence smaller QMAs could help to contain this problem. But unless such a situation prevails and New Zealand is faced with in-EEZ management problems, New Zealand would need to be cautious about denying foreign access if there were surplus fish available in the New Zealand EEZ.

Proposal: Foreign access to HMS stocks in QMS

- 212 For HMS stocks in the QMS, it is proposed that foreign licensed access to HMS in New Zealand' s EEZ would be allowed if -
- (i) The Minister considers it would be consistent with optimum utilisation of fish available within the New Zealand EEZ, **and**
 - (ii) The vessel would not be undermining any conservation or management measures established by an RFMO (e.g. where national allocations exist, it must be fishing against the allocation of a member of the RFMO and complying with all corresponding rules and conditions set by the state authorising its fishing activities).
- 213 To give effect to this, foreign allowable catch for HMS could be the amount, if any, remaining in the TAC after all domestic fishing mortality has been allowed for. The TAC would be set at the “optimum level” for the New Zealand EEZ, and the TACC would be equal to New Zealand' s allocation. After accounting for non-commercial catch and any other fishing mortality, the difference between the TAC and TACC would be the foreign allowable catch. For HMS in the QMS, this would generally be zero unless the New Zealand catch were capped by a national allocation from an RFMO, or if it were clear that New Zealand vessels did not have the capacity to harvest the available fish.
- 214 Alternatively, HMS stocks in the QMS could be exempted from the current provisions governing foreign allowable catch, and foreign licensing left to the Minister' s discretion. This would still probably require some criteria to be developed to guide decision-making. These criteria would include the elements in paragraph 212 above, but could also include other national fishing interests. An example of other national fishing interest could be that, by allowing access to

New Zealand's EEZ for HMS, it is easier for New Zealand fishers to acquire access to the waters of other countries in the region.

Proposal: Foreign access to non-QMS stocks

215 For highly migratory species without a New Zealand TAC, foreign licensed access to New Zealand's EEZ could be provided under an amended statutory framework. The framework should enable foreign access to the stocks within the New Zealand EEZ, provided the Minister determines New Zealand does not have the capacity to harvest the entire catch that would be consistent with optimum utilisation. It would also need to be consistent with RFMO measures to allow foreign access. As provided for under UNCLOS Article 62 (3), the Minister would also take into account other relevant factors, including but not limited to:

- (i) The significance of the fish stock to New Zealand's economy and its other national interests;
- (ii) The rights of land-locked, geographically disadvantaged, and developing country states as provided under UNCLOS; and
- (iii) The need to minimize economic dislocation in states whose nationals have habitually fished in the New Zealand EEZ or which have made substantial efforts in research and identification of stocks.

216 It would be appropriate to amend the Fisheries Act 1996 to remove the need to set a foreign allowable catch for any highly migratory stock that does not have a New Zealand catch limit. This would acknowledge that these limits will be set by international agreement and that it is inappropriate to impose catch limits on foreign fishers unless there are limits on New Zealand fishers.

217 The policies proposed above could result in a small increase in foreign licensed access to non-QMS stocks. The proposals need to be further refined, and could benefit from feedback from stakeholders.

5.7 Changes to the Fisheries Act 1996

218 Some elements of the proposed management approaches could be accomplished under existing law. For example, it might be possible to declare QMA boundaries beyond the EEZ, though of course these would apply only to NZ fishers. Alternatively, using conditions on fishing permits, all fish caught on the high seas or in other national EEZs could be deemed caught inside the EEZ for the purposes of the QMS or a similar regime. Out-of-EEZ catch could be counted against New Zealand quota and the TAC (this has been done previously for orange roughy on the Westpac Bank, adjacent to FMA 7). This would not remove the need for a high seas fishing permit in such circumstances.

219 However it might be more appropriate to provide for these arrangements explicitly via legislation. Changes to the FA96 might be required to accommodate the management approaches described above, including provisions for:

- (i) Setting of TACs:
 - a. Criteria for setting TAC for highly migratory species;
 - b. Possibly a new criterion for putting species on 3rd Schedule;

- c. Possible option to not have a TAC, or to have one set to give effect to an approved fisheries plan;
- (ii) Merging high seas catch into the QMS and providing for high seas catch history;
- (iii) Transferable effort entitlements (if this option is chosen for any species), including allocation of harvesting rights and setting of total allowable effort;
- (iv) Cooperative company structures (if this option is chosen for any species), including allocation of harvesting rights and protection of minority shareholders; and
- (v) Clarifying foreign licensed access to HMS stocks.

6 ASSESSMENT OF OPTIONS

- 220 Section 3.4 of this paper describes a set of desired features for an HMS management regime, based on the objectives proposed in section 3.1. This chapter assesses the management options presented in section 4 in terms how well they provide the desired features.
- 221 Note that the permit moratorium option is excluded from this analysis, as experience has shown that a moratorium is ineffective at limiting effort in a fishery and would be impractical once the FA96 is fully implemented (see section 4.3). Other options, e.g. transferable harvest rights, provide better means of limiting effort.
- 222 There are several features that all of the remaining options would have, and hence do not provide a basis for choosing from amongst the various management options. These features are:
- a. Flexibility to have different measures inside the EEZ and in international waters;
 - b. Ability to impose a range of sustainability measures, including input controls where necessary;
 - c. Ability to control New Zealand fishers outside the New Zealand EEZ (consistent with UNFSA), including reporting of out-of-EEZ catch against New Zealand quota and/or catch limits.
- 223 The options differ on a number of important features. These features are:
- a. Flexibility to have or not have catch limits and flexibility to transition from no catch limits to catch limits;
 - b. Ability to control, i.e. limit, access to the fishery and discourage a race to catch fish;
 - c. Transferability of harvest rights in the fishery;
 - d. Clear identification of any “beneficiaries” or “risk exacerbators” and thereby who should pay for any compliance and research;
 - e. Ability to achieve a high degree of compliance at reasonable cost;
 - f. An appropriate share or access to Maori consistent with the Deed of Settlement;
 - g. An appropriate share or access to recreational fishers; and
 - h. Where appropriate, the ability to allow foreign licensed access to the New Zealand EEZ and impose appropriate conditions on that access.
- 224 Table 3 presents an initial assessment of the ability of the different options to provide these features. Note that all of the options are able to provide the desired sustainability features, through either TACs or CCL and supplementary measures for bycatch. Thus, the only remaining sustainability criterion is the ability of different options to achieve a high degree of compliance at an acceptable cost.
- 225 The assessments in Table 3 are approximate only, as it is difficult to capture the nuances of the options. In many cases, the ability of an option to provide a

desired feature will depend on details of how and how quickly the option is implemented. In such cases, an option is typically given a single tick in the table, even though with proper specification and prompt decision-making it might be equal to or better than an option that gets two ticks because it can provide that feature with greater certainty.

- 226 Note that some features may be less important for some species than for others, so different options may be best suited to different species.

Table 3. Assessment of management options based on desired features for HMS management

Option	Sustain-ability	Net benefits (efficiency)			Maori and recreation	
	Compliance at reasonable cost	Flexibility to have catch limits or not	Transferable harvest rights	Ability to limit access; avoid race to catch	Share or access to Maori	Share access to sector
Status Quo	✍	✍✍				
Status Quo then QMS*	✍	✍✍	✍	✍	✍	
QMS*	✍✍		✍✍	✍✍	✍✍	✍
Modified QMS*	✍✍	✍✍	✍✍	✍	✍✍	
Transferable effort entitlements*	✍	✍✍	✍✍	✍	✍	
Cooperative ownership*	✍✍	✍✍	✍✍	✍✍	✍✍	✍

* Likely to require legislative amendment to Fisheries Act 1996.

✍ indicates that the option provides the desired features in part, sometimes because of time delays before the features are implemented.
 ✍✍ indicates that the option provides the full aspects of the desired features.

7 REQUEST FOR COMMENTS

Stakeholders are invited to offer comments on the issues and options described in this consultation paper. A list of questions is provided below to help you organize your thoughts. The Ministry of Fisheries invites your comments on any or all of these questions, and on any other aspect of this paper.

Comments are due by **Friday 28 February 2003**, and should be sent to HMS Project, c/o Policy and Treaty Strategy, Ministry of Fisheries, PO Box 1020, Wellington; email: hms@fish.govt.nz or fax 04-470-2586.

Questions for consideration and feedback

- Q1. Do you agree with the description of the fisheries provided in section 2 of this paper? Can you provide any more information about the nature of existing problems in these fisheries?
- Q2. For which species or fisheries are there particular problems of over-crowding, excessive competition, race for catch, or other factors reducing the net benefit New Zealand gets from these fisheries? Please provide as much evidence as possible to document these problems.
- Q3. Are there any other problems or issues that the Government should consider when determining future management approaches to these fisheries?
- Q4. Do you agree with the proposed objectives for HMS policy as described in section 3? If not, what would you change and why?
- Q5. Do you have any comments to make about the following options:
- (i) Status quo
 - (ii) Status quo then QMS
 - (iii) Permit moratorium
 - (iv) Standard QMS
 - (v) Modified QMS
- Q6. Transferable effort entitlements have not been used in New Zealand, so this option would require further development if it were to be implemented.
- (i) What do you think are the strengths and weaknesses of this option, and how would you implement it in practice?
 - (ii) Do you have any other comments about this approach?
- Q7. A cooperative company model is also a relatively new idea and would also require further development if warranted.
- (i) What do you think are the strengths and weaknesses of this option, and how would you implement it in practice?
 - (ii) Do you have any other comments about this approach?

- Q8. Which option should apply to each highly migratory species or groups of species, and when should it be implemented? Give reasons for your preferred options and, where possible, indicate what compliance issues are likely to arise and suggest how these could be addressed.
- (i) For tuna species (specify options for different species if necessary)
 - (ii) For swordfish
 - (iii) For sharks
 - (iv) For other fish bycatch species with commercial value (specify which species you would include in this category)
 - (v) For other fish bycatch species with no current commercial value
- Q9. Should the Government consider, for species to be managed in the QMS, introducing only those areas where there are utilisation issues, e.g. delaying introduction of out-of-EEZ fishing until there are compelling reasons to act? If so, for which species is this most appropriate?
- Q10. For species subject to a competitive CCL, should the New Zealand government authorize fishing in another nation's EEZ against New Zealand's allocation for that species?
- Q11. Do you agree that, for any species that would be managed in the QMS or via effort entitlements, catch history should be used for initial allocation of quota or other entitlements?
- Q12. What catch history years should be used for tuna species?
- Q13. Do you agree with the allocation procedure and eligibility criteria for quota proposed in paragraphs 79 and 180?
- Q14. How should any remaining unencumbered quota or entitlements (i.e. quota or entitlements held by the Crown after the initial allocation) be allocated: by catch history at a fixed price, preferential tender, or open tender? Why?
- Q15. For bycatch species, should unencumbered quota held by the Crown be allocated by catch history at a fixed price, preferential tender, or open tender, some other method?
- Q16. For species managed within the QMS, what criteria should guide whether all fishing would be covered by one QMA and one TAC, or more than one QMA? What criteria should determine QMA boundaries?
- Q17. Do you agree that, for any species to be managed in the QMS, all catch (inside the New Zealand EEZ and on the high seas) should be reported against New Zealand quota unless a fisher holds a valid fishing permit from another jurisdiction recognized by New Zealand?
- Q18. Do you agree that Part V of the FA96 should be amended to clarify provisions for foreign licensed access to the New Zealand EEZ, based on appropriate terms and conditions, as follows?

- (i) For HMS stocks with a New Zealand TAC, foreign access would be allowed provided it would be consistent with optimum utilization (as determined by the Minister) and with RFMO measures;
- (ii) For HMS stocks without a New Zealand TAC, foreign access would be allowed provided New Zealand did not have the capacity to harvest the available fish, that it would be consistent with RFMO measures, and subject to other relevant factors the Minister deems appropriate.

GLOSSARY

ACE	Annual Catch Entitlement. A tradable entitlement that allows the holder of a valid commercial fishing permit to harvest for sale a specified amount of fish, from a particular quota management fish stock in a particular year, without having to pay deemed values in respect of the fish harvested. Generally expressed in kilograms, ACE is allocated to owners of ITQ at the beginning of a fishing year based on their share of the TACC for the fish stock. If the TACC has not been reduced from the previous year additional ACE may be allocated to owners of uncaught ACE from the previous fishing year based on the amount of uncaught ACE held. ACE can be traded independently of the ITQ from which it was generated.
CCL	Commercial catch limit, used for some stocks not managed in the QMS and therefore not subject to a TACC. A CCL is usually "competitive" in that fishers are allowed to catch as much as possible until the CCL is reached.
CCSBT	Commission for the Conservation of Southern Bluefin Tuna. Regional fisheries management organisation comprising New Zealand, Australia, Japan and other countries. See Annex 1.
CPUE	Catch per unit of effort. One of the measurements used by fisheries scientists to assess the status of fish stocks.
EEZ	Exclusive Economic Zone. See footnote in the main text of the paper.
FA96	Fisheries Act 1996.
FAO	Food and Agriculture Organisation of the United Nations.
FMA	Fishery Management Area, an area defined under First Schedule of the Fisheries Act 1996 for purposes of fisheries management.
HMS	Highly migratory species as defined by UNCLOS and the WCPFC.
ITQ	Individual transferable quota, a defined share of a harvest right for a stock managed in the Quota Management System.
MSY	Maximum sustainable yield.
QMA	Quota Management Area, an area defined under the FA96 for the purpose of managing fish stocks via the QMS.
QMS	Quota Management System, a set of rights and responsibilities set out in the FA96 enabling management of fish stocks via ITQs.
RFMO	Regional fisheries management organisation.
SBT	Southern bluefin tuna.
TAC	Total allowable catch for a fish stock managed in the QMS.
TACC	Total allowable commercial catch for a fish stock managed in the QMS.
UNCLOS	United Nations Convention on the Law of the Sea of 10 December 1982; see Annex 1.
UNFSA	United Nations Fish Stocks Agreement; see Annex 1.
WCPFC	Western and Central Pacific Fisheries Convention; see Annex 1.

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APPENDIX 1: INTERNATIONAL AGREEMENTS

Following are brief summaries and excerpts from selected international agreements to which New Zealand is a party that are relevant to management of highly migratory species.

Western and Central Pacific Fisheries Convention (WCPFC)

Concluded in September 2002 in Honolulu, this Convention is one of the first regional fisheries agreements to be adopted since the conclusion in 1995 of the UN Fish Stocks Agreement. The Convention has not yet entered into force, pending ratification by the requisite number of signatories, but preparatory work is well under way. The objective of the Convention is to ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stocks in the western and central Pacific Ocean in accordance with the 1982 United Nations Convention on the Law of the Sea and the 1995 UN Fish Stocks Agreement (see below). For this purpose, the Convention establishes a Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. The Contracting Parties to the Convention are, *facto*, members of the Commission.

The Convention applies to all species of highly migratory fish stocks (defined as all fish stocks of the species listed in Annex I of the 1982 Convention occurring in the Convention Area and such other species of fish as the Commission may determine) within the Convention Area, except sauries. Conservation and management measures under the Convention are to be applied throughout the range of the stocks, or to specific areas within the Convention Area, as determined by the Commission.

Further information, including the full text of the Convention, can be found on the Internet at www.ocean-affairs.com

Commission for the Conservation of Southern Bluefin Tuna (CCSBT)

Originally a trilateral arrangement between New Zealand, Australia and Japan, the Commission now includes Korea and, imminently, Taiwan. Indonesia's membership is being pursued as a matter of urgency. Through the Commission, members collectively agree to limit their catch to national allocations, towards a general aim of rebuilding parental stocks to 1980 levels by the year 2020.

The Commission actively manages a catch of about 14,400 tonnes, which represents about 92% of the estimated 2000 global catch of SBT or 80% of the average global catch in 1998-2000. If the Indonesian catch (estimated to be about 1,367 tonnes in 2000 and an average of 1,877 in 1998-2000) can be brought within the ambit of CCSBT management arrangements, almost 99% of the 2000 global catch level will be brought under CCSBT management.

For more information, see www.ccsbt.org

United Nations Convention on the Law of the Sea (UNCLOS) 1982

Several articles are relevant, but especially articles 61 (conservation of living resources, with reference to maximum sustainable yield), 62 (utilization of living resources, including provisions regarding foreign access) and 64 (highly migratory species, with reference to optimum utilization). A summary and text of the Convention can be found on the Internet at www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm

United Nations Fish Stocks Agreement 1995

The formal title of this agreement is the “Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks”. The entire agreement is relevant, of course, but the main themes are presented in Article 5 (General principles), Article 6 (Precautionary approach) and Article 7 (Compatibility of conservation and management measures). A summary and text of the Convention can be found on the Internet at www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm

FAO Code of Conduct for Responsible Fishing 1995

“States and users of living aquatic resources should conserve aquatic ecosystems. The right to fish carries with it the obligation to do so in a responsible manner so as to ensure effective conservation and management of the living aquatic resources.”

“..management measures should not only ensure the conservation of target species but also of species belonging to the same ecosystem or associated with or dependent on the target species.”

A summary and text of the FAO Code of Conduct can be found on the Internet at www.fao.org/fi/agreem/codecond/codecon.asp

FAO International Shark Management and Conservation Plan of Action 1999

“States that contribute to fishing mortality on a species or stock [of sharks] should participate in its management...” and,

“Management and conservation strategies should aim to keep total fishing mortality for each [shark] stock within sustainable levels by applying the precautionary approach.”

A summary and text of the Plan of Action for Sharks and other species can be found on the Internet at www.fao.org/fi/ipa/ipae.asp

Convention on Biological Diversity 1992

“ Each Contracting Party shall, as far as possible and as appropriate:
..adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity” – Article 10 (Sustainable Use of Components of Biological Diversity).

The text of the Convention can be found at www.biodiv.org/convention/articles.asp For general information about the Convention see www.biodiv.org

Bonn Convention on Migratory Species 1979

The Convention on the Conservation of Migratory Species of Wild Animals 1979 (Bonn Convention) provides that parties to the Convention "shall endeavour to conclude agreements where these would benefit the species" listed on the Bonn Convention Appendices.

For more information, see www.oceanlaw.net/texts/bonn.htm

Agreement on the Conservation of Albatrosses and Petrels (ACAP) 2001

This Agreement, based on the Bonn Convention, includes an Action Plan describing a number of conservation measures to be implemented by signatories. These include research and monitoring, reduction of incidental mortality in fisheries, eradication of non-native species at breeding sites (especially introduced predators such as rats and cats), reduction of disturbance and habitat loss, and reducing pollution. In addition, parties are to prohibit, subject to certain limited exceptions, the deliberate taking of, or harmful interference with, albatrosses and petrels, their eggs or their breeding sites.

For more information, see www.oceanlaw.net/bulletin/sample/focus/0104b.htm

Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific 1989 (Wellington Convention)

The Convention prohibits driftnet fishing activities in the Convention area. "Driftnet fishing activities" are defined as: (i) catching, taking or harvesting fish with the use of a driftnet; (ii) attempting to catch, take or harvest fish with the use of a driftnet; (iii) engaging in any other activity which can reasonably be expected to result in the catching, taking or harvesting of fish with the use of a driftnet, including searching for and locating fish to be taken by that method; (iv) any operations at sea in support of, or in preparation for any activity described in this paragraph, including operations of placing, searching for or recovering fish aggregating devices or associated electronic equipment such as radio beacons; (v) aircraft use, relating to the activities described in this paragraph, except for flights in emergencies involving the health or safety of crew members or the safety of a vessel; or (vi) transporting, transshipping and processing any driftnet catch, and cooperation in the provision of food, fuel and other supplies for vessels equipped for or engaged in driftnet fishing [Article 1(c) and 2].

For more information, see www.oceanlaw.net/texts/summaries/wellington.htm

APPENDIX 2: SUMMARY OF TUNA AND SWORDFISH CATCH IN THE NEW ZEALAND FISHERY

Table A1. Catch estimates of tuna species and swordfish, 1990 – 2001, all gear types.

Year	ALB	BIG	NTU/ TOR	STN	SKJ	YFN	SWO
1990	3011	30	0	529	4079	18	80
1991	2459	44	2	165	5259	6	42
1992	3487	39	0	279	988	20	29
1993	3387	74	6	217	946	34	93
1994	5317	71	2	277	3137	53	94
1995	6295	60	2	436	1729	141	108
1996	6346	89	4	139	3652	198	182
1997	3628	142	14	334	6570	143	282
1998	6526	388	20	337	8156	127	564
1999	3903	421	21	461	5688	154	1004
2000	4500	422	21	380	9699	107	975
2001	5353	480	50	359	3692	137	1029

Table A2. Catch estimates of tuna species and swordfish, by gear type, 1999 – 2001.

	Year	ALB	BIG	NTU/ TOR	STN	SKJ	YFN	SWO
Troll	1999	1799	1	0	2	20	4	0
Troll	2000	3084	0	0	1	29	9	1
Troll	2001	3254	0	0	0	61	7	0
3-yr average	Avg	2712	1	0	1	37	7	0
Purse seine	1999	0	0	0	0	5656	0	0
Purse seine	2000	0	0	0	0	9658	0	0
Purse seine	2001	0	0	0	0	3621	0	0
3-yr average	Avg	0	0	0	0	6312	0	0
Longline	1999	2103	420	21	457	1	149	1004
Longline	2000	1344	421	21	380	2	98	973
Longline	2001	2093	480	50	358	8	130	1029
3-yr average	Avg	1847	441	31	398	4	126	1002
Pole&Line	1999	0	0	0	0	11	1	0
Pole&Line	2000	72	0	0	0	11	0	0
Pole&Line	2001	4	0	0	0	0	0	0
3-yr average	Avg	25	0	0	0	7	0	0
Unclassified	1999	2	0	0	2	0	0	0
Unclassified	2000	0	0	0	0	0	0	0
Unclassified	2001	2	0	0	0	1	0	0
3-yr average	Avg	1	0	0	1	0	0	0

ALB = albacore; BIG = bigeye tuna; NTU/TOR = Pacific bluefin tuna, previously thought to be northern bluefin tuna; STN = southern bluefin tuna; SKJ = skipjack tuna; YFN = yellowfin tuna; SWO = swordfish.

Note: All catches are reported in tonnes of greenweight. 0 = less than 100 kg. Source: Murray et al., 2002.