

INDIVIDUAL TRANSFERABLE QUOTAS IN NEW ZEALAND TUNA FISHERIES

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ABSTRACT

New Zealand's \$25M (USD) domestic tuna fishery comprises a trolling fishery for albacore, a longline fishery for southern bluefin, Pacific bluefin, bigeye, yellowfin, and albacore tunas, and a small purse seine fishery for skipjack tuna. New Zealand vessels also fish for tuna in high seas areas and, through arrangements with other governments, in the fishery management zones of some Pacific Island Nations. Unlike other major New Zealand domestic fisheries, tuna fisheries have to date been open access. New Zealand domestic tuna fisheries are constrained by the availability of tuna in New Zealand fisheries waters and the longline fishery in particular has been characterized by overcapacity and poor economic returns. Following a recent review of management options, the New Zealand Government decided to manage its tuna fisheries using Individual Transferable Quotas (ITQs). ITQ management will initially apply to all major tuna fisheries within New Zealand fisheries waters and, where a national allocation is agreed through the relevant Regional Fisheries Management Organization, for tuna species taken by New Zealand fishers outside New Zealand fisheries waters. Total allowable commercial catches (TACCs) will reflect agreed national allocations. Where national allocations have not been set, TACCs will be set so as not to constrain fishing unduly, while ensuring sustainability of the stocks. Voluntary rationalization of the tuna fishing fleet commenced soon after the announcement of ITQ management. As expected, the initial allocation of ITQs has proved contentious with different fishers promoting the use of different catch history years as a basis for quota allocation.

Keywords: tuna fisheries; individual transferable quotas; New Zealand

INTRODUCTION

Individual Transferable Quotas (ITQs) were first used in New Zealand in 1986 and, by 1 October 2003, 59 species or species complexes were managed in 333 stocks using ITQs (Clement, 2003). This includes most major commercially harvested species and includes very different types of species—molluscs, crustaceans, echinoderms, and a wide range of bony fishes and sharks and rays. Various authors have reported New Zealand's experience of ITQs, including Boyd and Dewees (1992), Annala (1996), Batstone and Sharp (1999), and Hersoug (2002).

Notable exceptions to the widespread use of ITQ management have been New Zealand's tuna fisheries. All other fisheries have been subject to a moratorium on the issuing of new permits since 1992, pending management by ITQs, but permits remain available on request for tuna fisheries. The different treatment of tunas reflected the view that there was potential for expansion of these fisheries and that there were either no sustainability concerns about current levels of fishing or any sustainability concerns were addressed through the relevant regional fisheries management organization (RFMO). Tuna fisheries differ in a number of respects to many fisheries managed by ITQs—including being based on highly migratory species subject to regional fisheries management arrangements, and having both excess competition in some domestic fisheries and opportunities for further development of fisheries for the same species beyond New Zealand fisheries waters (the Exclusive Economic Zone (EEZ) and Territorial Sea). Recent expansion in domestic tuna fisheries and changes in international management arrangements for tuna fisheries prompted a review of options for future management of New Zealand's

tuna fisheries. This paper reports on the review, focusing on an assessment of the suitability of ITQs for managing tuna fisheries, and key issues that have arisen during the implementation of ITQs.

BACKGROUND

New Zealand Tuna Fisheries

Murray *et al* (2001) report that New Zealand tuna fishing began in 1968 when albacore were landed into North Island ports. Interest expanded following successful purse seine surveys in 1974 and 1975 targeting skipjack. Interest in other tuna species 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 fishing capacity occurred as foreign licensed fishing within the EEZ declined during the 1980s and 1990s. The foreign fleets that dominated tuna catches around New Zealand from the 1960s have not fished in the EEZ since 1994-95 with the exception of occasional purse seine sets by US vessels. The value of the domestic tuna industry now exceeds \$25M (USD) per year (export value) with potential to expand further (Murray *et al.*, 2002).

The New Zealand tuna industry now lands tuna year round. Activity peaks in summer with a large trolling fleet usually comprising over 200 small and medium size vessels, used in other fisheries for the remainder of the year, targeting albacore primarily off the west coasts of the North and South Islands. Small numbers of skipjack tuna are also taken by trolling. Also in the summer, a small purse seine fleet (about nine vessels) targets skipjack tuna mostly off the northeast of the North Island. Southern bluefin tuna have traditionally been caught by handline and trolling during winter months off the west of the South Island from small vessels. Although these methods are still occasionally used most southern bluefin tuna are now taken by the more than 100, 20–50m longline vessels targeting this species in the autumn-winter months, mostly off the south and east of New Zealand. The southern bluefin tuna fishery has closed in early winter in the past few years when the catch limit has been reached, at which point fishers target other species. Longliners are used to target bigeye and albacore tunas throughout the year around the northern half of the North Island. Yellowfin tuna, caught in small numbers in the trolling and purse seine fisheries, are generally a bycatch of longline sets targeting bigeye in the summer. The number of vessels in the domestic tuna fishery from 1990 to 2000 is shown in Figure 1.

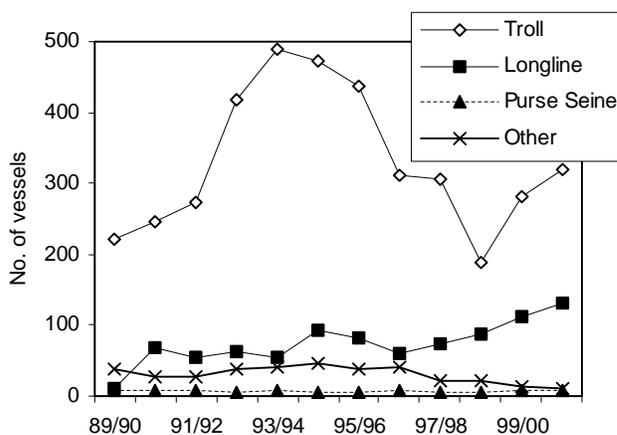


Figure 1. Numbers of vessels targeting tuna species by gear type and fishing year

Since about 2000, three New Zealand companies have purchased four superseiners that operate mostly in the equatorial Western Pacific and catch around 25,000–30,000 tonnes of skipjack and other tuna species. These vessels were operating in the same area prior to their purchase by New Zealand companies and, therefore, do not represent an increase in overall effort in the fishery.

Compared with total regional catches of the relevant tuna stocks, New Zealand’s catches are small. Data from Murray *et al* (2002) and Lawson (2002) show that annual domestic tuna landings are now expected to be on the order of 3,700–6,500 tonnes for albacore (about 10% of total catch in the region), 100–400 tonnes for bigeye (about 0.4%), 1,000–7,500 tonnes for skipjack (about 0.5%), 420 tonnes for southern bluefin (about 2.5%), and 100–200 tonnes for yellowfin tuna (less than 0.1%). New Zealand domestic tuna catch data for 1990 to 2001 are shown in Table I.

Table I: Domestic Catch Estimates of Tuna Species, 1990 – 2001, All Methods (tonnes)

Year	Albacore	Bigeye	Northern Bluefin/ Pacific Bluefin	Southern Bluefin	Skipjack	Yellowfin
1990	3011	30	0	529	4079	18
1991	2459	44	2	165	5259	6
1992	3487	39	0	279	988	20
1993	3387	74	6	217	946	34
1994	5317	71	2	277	3137	53
1995	6295	60	2	436	1729	141
1996	6346	89	4	139	3652	198
1997	3628	142	14	334	6570	143
1998	6526	388	20	337	8156	127
1999	3903	421	21	461	5688	154
2000	4500	422	21	380	9699	107
2001	5353	480	50	359	3692	137

Tuna caught in New Zealand fisheries waters are part of broadly distributed stocks that are subject to fishing by many fleets and gear types at different stages of their lives. The status of these stocks is summarized in Table II.

Table II: Stock Status of Tuna Species

Stock	Status
Southern Bluefin	Severely depleted; subject to national allocations
Pacific Bluefin	Little information available; stock status uncertain
Bigeye	Stock size probably greater than B_{MSY} but current exploitation rate unsustainable in the long term
Yellowfin	Nearing full exploitation
Albacore (S. Pacific)	Sustainable; lightly exploited
Skipjack	Sustainable

Sources: Murray *et al* (2001); WCPFC PrepCon (2002); MFish (2004)

Seventy species of fish bycatch were observed in the tuna longline fishery, although many of these species were only taken in small quantities (Francis *et al.*, 2000). 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. 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 trolling fishery. Neither fishery has had significant observer coverage since that time, and the current extent of bycatch in these fisheries is unknown.

There are recreational trolling fisheries targeting 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. Yellowfin tuna are a highly prized recreational species taken by trolling and line fishing primarily in the Bay of Plenty and along the north east coast. There is no known recreational fishery for bigeye tuna or southern bluefin tuna.

Management Issues

Two main issues prompted the review of management options for New Zealand tuna fisheries; excess fishing capacity in domestic tuna longline fisheries and changes in international management arrangements for tuna.

Tuna fisheries are the only New Zealand fisheries for which entry is unconstrained. Consequently, the tuna fisheries are popular with new fishers and, because the catch history years (the years in which a fisher's catch contributes to subsequent quota allocation) for tuna species are not specified in the Fisheries Act 1996, fishers may have believed that by entering these fisheries in recent years, they could gain quota if and when tuna species are managed using ITQs.

There have been anecdotal reports of problems in the surface longline fishery including crowding of vessels and excessive competition for the fish available in New Zealand fisheries waters. These problems are most evident in the southern bluefin fishery, where they appear to be driven by the commercial catch limit. 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 kilometers of line, some vessels can be effectively prevented from fishing in a preferred location by other vessels already there. The pressure to catch fish early in the season also means that larger vessels, able to fish further from shore and in bad weather, 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 catch limit fishers face a significant risk that the fishery will be closed early and that they will be shut out.

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. Fishers report 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. \$16(USD)/kg in May compared with \$64(USD)/kg in August). With a competitive catch limit, 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 New Zealand fisheries waters or in all years, New Zealand might be getting substantially less than maximum value from its allocation of 420 tonnes of southern bluefin tuna. 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 for this species. The increasing numbers of longline vessels, shown in Figure 1, suggests that these problems are getting more serious over time.

Although the trolling fishery involves more vessels than the longline fishery, there is no comparable race for catch in the trolling fishery apparently because the trolling fishery primarily targets albacore, which are more abundant and for which there is 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, the number of trolling vessels decreased by over 60 percent during the mid-

1990s and is still well below the peak of 490 vessels in 1993/94 (see Figure 1). In the past, when large US superseiners fished freely in the EEZ, domestic purse seine fishers complained of crowding on the east coast of the North Island. However, there is now very little fishing in the EEZ by US vessels and there may be potential for expansion of the domestic purse seine fishery. There is also considerable opportunity for expansion of New Zealand involvement in tuna fisheries outside New Zealand fisheries waters.

Under article 64 of the 1982 United Nations Convention on the Law of the Sea (UNCLOS), New Zealand has an obligation to co-operate with other states through appropriate international organizations to ensure conservation of, and to promote optimum utilization of, highly migratory species (HMS) (which includes tunas). This obligation is repeated and reinforced in article 8 of the United Nations Fish Stocks Agreement (UNFSA), which provides a framework for the establishment of RFMOs to manage these stocks.

New Zealand is an active participant in two such regional organizations. The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) was ratified in 1994 by Australia, Japan and New Zealand. Taiwan and South Korea have recently joined CCSBT and current members accounted for over 90 percent of the harvest of southern bluefin tuna in 2000. CCSBT members have established catch limits towards the goal of rebuilding the fishery by 2020, and New Zealand's 420 tonne national allocation agreed through CCSBT is the basis for the competitive catch limit in the New Zealand fishery.

A second agreement, the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC), came into force in June 2004. A commission has been established to manage tuna and other HMS stocks in the region, with functions including setting conservation and management measures for HMS stocks, and allocating rights to use the fisheries covered by the Convention. New Zealand, like other member states, will need to develop management arrangements to control the utilization of the national allocations agreed through WCPFC.

Conservation and management measures adopted by coastal states and RFMOs need to be compatible. Since the WCPFC is unlikely to determine these conservation and management measures for a number of years, the choice for New Zealand was three-fold: wait for WCPFC to determine measures and implement corresponding measures; try to anticipate the measures that will be adopted and implement corresponding measures now; or implement measures that are best for New Zealand now and seek to minimize any transition costs that may arise from implementation of WCPFC measures in the future. Since there are domestic management issues that require immediate action, the first option was not acceptable. The difficulty of anticipating what measures WCPFC 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 was likewise not acceptable. Therefore, it was decided to implement measures that are best suited to address issues in New Zealand tuna fisheries now, while being cognizant of potential transition costs.

Thus, the challenge for the review was to identify a management option that would address the problem of excess capacity in some domestic tuna fisheries without unduly hindering expansion of catch of under-utilized tuna stocks within and beyond New Zealand fisheries waters.

REVIEW OF MANAGEMENT OPTIONS

Process

In November 2002, prior to initiating consultation with stakeholders, the Minister of Fisheries made a decision in principle on allocation of fishing rights. The Minister announced that, if a decision were later taken to use ITQs or other rights based mechanisms to manage tunas, the rights would be allocated using catch history but the qualifying period of catch history would not extend beyond 30 September 2002. (The Minister indicated that catch history years might be extended for skipjack tuna and for tuna fishing beyond New Zealand fisheries waters, and this remains possible given the timing of proposed ITQ management of these fisheries—see below.) This announcement was made to avoid any further race for quota as management options were being considered. The decision was unpopular with a few fishers who had only just entered the fishery or were about to do so, but the decision was considered necessary to avoid exacerbating a race for quota.

The Ministry released a stakeholder consultation paper in December 2002 with a proposed goal and a number of management options (Ministry of Fisheries, 2002), held stakeholder meetings in February 2003, and released a second paper with a preferred option in March 2003 (Ministry of Fisheries, 2003) followed by more meetings. The Minister announced his decisions in June 2003, after which the Ministry has proceeded to develop implementing legislation and decisions to bring tuna species into New Zealand's ITQ System.

Goal

As an initial step in the review of management options, an overall goal for New Zealand fisheries on highly migratory species (including tuna) was developed to guide the assessment of options. The final version of the goal, confirmed by the New Zealand Government, is:

To maximize the value that New Zealanders obtain through the sustainable utilization of highly migratory species, within New Zealand fisheries waters and beyond, by measures including:

- *Implementing effective arrangements to provide for commercial and non-commercial utilization and to manage New Zealand's rights and responsibilities pertaining to highly migratory species, and*
- *Representing New Zealand's interests in regional fisheries management organizations including in (i) the establishment of, and compliance with, regional measures to ensure the sustainability of HMS stocks, (ii) the determination of national allocations and (iii) the determination of conditions of access to HMS resources in the region,*

Subject to:

- *Ensuring the viability of associated or 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.*

The Deed of Settlement is the basis for the settlement of long-standing grievances between the Government and Maori (the indigenous people of New Zealand) over loss of Maori fisheries rights. Important elements of the Deed are the allocation to Maori of 20 percent of quota for species that become

subject to ITQ management, and the commitment to facilitate Maori participation in the business of fishing.

Options

A wide range of management options was identified for consultation and evaluation. The options included variations on ITQs, other common management measures, and a sole ownership model. The options were:

- **Status quo** – Fisheries would remain open access without catch limits until a national allocation was determined by an RFMO, at which point a commercial catch limit would be imposed.
- **Status quo then ITQs** – Fisheries would remain open access with no catch limits *as an interim measure* but would be managed by ITQs when a national allocation was determined or earlier if sustainability issues arose.
- **Permit moratorium** – Either of the first two options could be combined with a moratorium on new fishing permits for tuna species (from which tuna species are currently exempt).
- **Standard ITQs immediately** – The standard ITQ system used in other New Zealand fisheries would be used immediately.
- **Modified ITQs** – Legislation would be amended to enable ITQs to be issued based on catch history but with flexibility to not have a total allowable commercial catch (TACC) until a national allocation is determined (i.e., fishers would receive a share of an unspecified TACC).
- **Transferable effort entitlements** – Total effort in a fishery would be limited and rights to units of effort (e.g., number of vessels or number of hooks) allocated and trading permitted.
- **Cooperative ownership structure** – The Government would allocate to fishers shares in a cooperative company that would have sole commercial fishing rights to harvest one or more tuna species. TACCs would apply to species when national allocations were determined by RFMOs and in certain other situations.

Evaluation

Each of the management options was evaluated against a number of criteria considered important to address current issues in the fisheries and achieve the management goal set out above. The evaluation criteria were:

- Effectiveness in achieving sustainability outcomes
- Ability to impose a range of sustainability measures, including input controls where necessary
- Enforceability
- Efficiency, including:
 - Flexibility to apply different measures inside and beyond New Zealand fisheries waters
 - Transferability of catching rights
 - Ability to limit access to avoid race to fish
- Meet obligations to provide an appropriate share or access to Maori consistent with the Deed of Settlement
- Provide an appropriate share or access to recreational fishers
- Ability to identify those who generate costs and those who benefit from the fishery to allow apportionment of compliance and research costs

- Meet international obligations, including ability to control New Zealand fishers outside New Zealand fisheries waters and reporting of catch against New Zealand quota or allocation

Information obtained from consultation with stakeholders was used to help assess the options against the evaluation criteria. The evaluation process was made easier by the fact that there was general agreement about the nature of the problems and opportunities in the tuna fisheries and about the proposed goal for the fisheries. The discussion and analysis therefore focused on the management options.

There was little support from stakeholders for options such as a permit moratorium, transferable permits or effort entitlements. The Ministry of Fisheries agreed that these options have disadvantages. Permit moratoriums have not proved effective at limiting effort and effort controls are likely to be expensive to administer effectively—particularly since New Zealand has not used this approach for some time.

There was also little support for a cooperative company structure. The Ministry of Fisheries held the view that, over time, the industry will achieve best value through fisheries rights holders acting collectively. However, this outcome is currently hindered because rights are not specified adequately in all fisheries sectors, industry lacks the capacity and incentives for collective action, and there are significant transaction costs. A cooperative company model would be difficult to implement in the tuna fishery at this time, given the large number of fishers using different types of gear and with different mixes of species in their harvesting strategies. Collective action may emerge once rights are specified and confirmed via quota allocation.

There was general agreement that of the seven options considered, only three (*viz.*, status quo then ITQs, standard ITQs immediately, and modified ITQs) were worthy of further consideration. However, there was little agreement on which of these three options should be implemented. Management by ITQs immediately gives certainty to fishers as to what their share of each tuna fishery will be and allows them to plan for the future accordingly. Confirming the participants in the fishery would enable more rational development and improve compliance with formal and informal codes of fishing practice. Thus, use of ITQs would be likely to provide security of access, allow any required rationalization of the fishing effort, reduce spatial competition amongst vessels, and improve economic returns by allowing the industry to focus on maximizing product quality.

A key industry concern about using ITQs prior to determination of national allocations has been that the TACCs would constrain development of the New Zealand tuna industry and put fishers at a competitive disadvantage compared with fishers from other countries that do not constrain tuna fishing. For this reason, some fishing interests preferred to explore the ‘modified ITQ’ option in which shares would be issued but no TACC would be set. It was not clear, however, whether entry to the fishery could be effectively controlled without TACCs.

On the other hand, it is possible to set TACCs so as not to unduly constrain fishing without setting the TACC so high as to reduce the value of ITQs to very low levels. (If the TACC is set well above the available catch, there would be surplus catch entitlement and it would trade for a very low price. The Ministry considered that ITQs needed to have sufficient value to provide an incentive for rationalization of the fishery.) Based on experience with ITQs in other fisheries, the Ministry of Fisheries considered that setting initial TACCs at around 1.5 times the best recent catch would likely strike the appropriate balance—provided this is consistent with sustainability objectives. New Zealand legislation includes provision for TACCs to be adjusted within a fishing year and between years, if catches warrant, allowing for appropriate expansion of tuna fisheries.

Some of the benefits of ITQs could be achieved through the modified ITQ option. This option would have the advantage of not constraining catches. However, the same outcome could be achieved by setting

a higher TACC under the standard ITQ option. The modified ITQ would do little to control access to the fishery. Given the possibility that national allocations might not be determined for most tuna species for five or ten years, the modified ITQ option would leave open the possibility of significant new entry by fishers who have little or no long term stake in the fishery. This would not address problems of overcapitalization and would not provide the certainty necessary to encourage investment in fisheries with opportunity for development.

Proposed Management

After evaluating the options and considering stakeholder views, the Ministry of Fisheries recommended, and the New Zealand Government adopted, a mix of two options. Within New Zealand fisheries waters, all tuna fisheries would be managed by ITQs as soon as practicable. Beyond New Zealand fisheries waters, ITQs would be used only after a national allocation has been determined—or sooner in the unlikely event that unilateral management measures were considered necessary.

The recommendation and subsequent decision took into account the different issues in the different tuna fisheries. Within New Zealand fisheries waters the approach allows rationalization of the currently overcapitalized longline fishery and, through appropriate TACC-setting, allows controlled development of fisheries where appropriate. The approach will also allow further development of New Zealand involvement in tuna fisheries outside New Zealand fisheries waters. It provides incentives for fishers to expand their involvement in these areas by confirming that catch history will be used as the basis for allocating quota outside New Zealand fisheries waters and that catch history years will be set in the future. Use of ITQs will also allow the Government to meet its obligations to provide 20 percent of quota to Maori and facilitate Maori participation in the business of fishing.

IMPLEMENTATION

Domestic Fisheries

Following the Government's decision in principle to manage tuna species by ITQs, the normal processes for introduction of species into the ITQ system have been initiated for tuna within New Zealand fisheries waters. For each species proposed for management by ITQs, the Fisheries Act requires consultation on a range of issues including the costs and benefits of managing the species by ITQs, the boundaries of the quota management areas (QMAs), and the TACC for the species in each QMA. Consultation has been completed in respect of the four main tuna species taken primarily by the longline method (southern bluefin, Pacific bluefin, bigeye, and yellowfin tunas) and these species are scheduled to be managed by ITQs from 1 October 2004. For southern bluefin tuna, a single QMA will include all areas both within and outside New Zealand fisheries waters; each of the other three species will initially be managed in a single QMA comprising all New Zealand fisheries waters. Use of ITQs to manage these three species in areas outside New Zealand fisheries waters will be deferred until a national allocation is determined through WCPFC. The Government is currently consulting on proposals to manage albacore and skipjack tunas within New Zealand fisheries waters by ITQs from 1 October 2005.

There are anecdotal reports that the decision to use ITQs in tuna fisheries and the confirmation of catch history years for tuna fisheries within New Zealand fisheries waters has already resulted in rationalisation of the longline fleet. Some fishers are already arranging to sell their yet-to-be-allocated tuna quota and leave the fishery while others are intending to expand their participation in the fishery.

Implementation Issues

Two main issues have arisen during implementation of ITQs in domestic fisheries; differences over preferred catch history years and the mismatch between catch history years for tunas and tuna bycatch species. A third issue concerns extension of the ITQ system beyond New Zealand fisheries waters.

The Fisheries Act 1996 does not specify the catch history years to be used for tuna species. Instead, the Minister of Fisheries is given discretion to specify the catch history years. A number of factors could be taken into account in deciding whether to use recent or earlier years and the number of catch history years. Use of earlier years would reward those permit holders who developed the tuna fisheries but would disadvantage the many permit holders who entered the fisheries more recently. Use of recent years would generally advantage recent entrants. Typically, if a larger number of catch history years are chosen, more permit holders would receive Provisional Catch History (PCH) and the total PCH allocations would be higher. However, there would also be an increased likelihood of larger reductions from the PCH allocated to each permit holder to the amount of quota that they would eventually receive, to ensure that total catches would remain within the TACC. Use of fewer catch history years would generally result in fewer and smaller allocations of PCH but there would also be a smaller reduction from the PCH allocated to permit holders to the amount of quota they receive.

Ultimately the Ministry of Fisheries recommended using fewer and recent catch history years because it would minimize the reduction from PCH for fishers currently in the fisheries and would reduce the amount of buying and selling of quota necessary for current fishers to maintain viable businesses. The Minister of Fisheries accepted this advice but advised the tuna industry that he was willing to consider using a larger number of catch history years if there was a strong consensus for alternative years. However, tuna industry organizations were unable to achieve a consensus for any alternatives and the catch history years were set as the two years (southern bluefin and bigeye tunas) or three years (Pacific bluefin and yellowfin tunas) ending September 2002.

Submissions from fishers on this issue confirmed that fishers will generally choose the catch history years that would maximize their individual quota allocations, making it difficult if not impossible to reach a consensus amongst fishers. This underscores the importance of establishing catch history years through a mechanism that is robust to challenge from interested parties, or using an alternative mechanism to allocate quota. Proposed amendments to the Fisheries Act currently being considered by the New Zealand Parliament would see use of catch history for allocation of quota being phased out for most species, once most developed fisheries have been brought under ITQ management.

The other major concern for fishers is the need for continued access to a range of bycatch species, which in longline tuna fisheries may cumulatively comprise more than half of the catch by number of fish caught, although generally much less by value. The Fisheries Act specifies catch history years for non-tuna species as the two years ending on 30 September 1992 and many, perhaps most, tuna fishers will receive no quota for bycatch species because they started tuna fishing after 1992. Instead, much of the quota will initially be allocated to the Government, which can then sell it to fishers.

Apart from swordfish, the tuna bycatch species are of relatively low commercial value. Despite this, bycatch quota could sell for high prices because it could control access to tuna fisheries. In effect, the value of tuna fisheries with large amounts of bycatch could be transferred to the bycatch quota. The Government normally tenders any quota it receives but many independent fishers believe that they could be forced out of business if they have to compete with large companies in an open tender for bycatch quota. Fishers have requested that the Government dispose of its quota using a mechanism that gives preference to existing tuna fishers and makes quota available at reasonable cost. The Ministry of Fisheries has acknowledged that an open tender could cause possible dislocation in the longline fishery.

However, the Ministry wants to avoid setting a precedent that would create an incentive for fishers to fish for species yet to be managed by ITQs with the goal of receiving a preferential allocation of Government-owned quota. Different options are being considered and a decision on disposal of Government-owned quota for tuna bycatch species is expected soon.

This experience shows the desirability of ensuring the same catch history years are used for all species caught in the same fishery.

A third major issue has arisen in respect of the proposal to use the ITQ system outside New Zealand fisheries waters. Consistent with the Deed of Settlement, the Fisheries Act requires 20 percent of quota for a fish stock to be allocated to Maori when ITQ management is implemented for that stock. The Government's view is that this obligation includes fish stocks outside New Zealand fisheries waters that are managed using ITQs. Many tuna industry members believe that the obligation to allocate 20 percent of quota to Maori applies only within New Zealand fisheries waters and that the eventual loss of 20 percent of their catch history will make increased involvement by New Zealand companies in tuna fisheries outside New Zealand fisheries waters uneconomic. Some companies have advised that they will re-flag their tuna vessels if the requirement to allocate 20 percent of quota to Maori is extended to areas outside New Zealand fisheries waters.

This issue demonstrates the value placed on long-term fishing rights by fishers and the importance of specifying clearly the basis on which fishing rights will be allocated.

CONCLUSION

Evaluation of different management options for New Zealand's tuna fisheries resulted in a decision to use ITQs—initially within New Zealand fisheries waters but with ITQ management to be extended beyond New Zealand fisheries waters when national allocations are determined through RFMOs. Tunas differ from many species already managed by ITQs but the flexibility afforded by ITQs—including the choice of when to set the catch history period on which quota will be based, and the level of the TACC—allows this instrument to be used to achieve different objectives in different fisheries. Specifically, where there are no sustainability concerns or national allocations TACCs can be set at a level designed to either encourage rationalization of the fishery to match availability of fish in a particular area or to provide for controlled development of the fishery. Alternatively, committing to future ITQ management and confirming the use of future catch history years—but deferring application of ITQ management—can provide incentives for fishers to develop, or increase their involvement in, a fishery.

The review of management options and the nearly-complete process to implement ITQ management for four tuna species has confirmed the importance of establishing a clear and robust basis for quota allocation and highlighted the desirability of using the same allocation mechanism for different species taken in the same fishery.

The evaluation of management options showed that ITQs would address the important issues in the management of New Zealand's tuna interests—both within and beyond the country's national fisheries waters. Since many issues faced by RFMOs—including the need to ensure the sustainability of fish stocks and allocate catching rights between fishery participants, and the desirability of providing for efficient utilization of fisheries resources—are similar to those faced by New Zealand, management systems based on ITQs may also hold considerable potential for managing fisheries at the RFMO level.

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